Academic Calendar Fairbanks Campus

For academic calendar information for UAF's community campuses, contact the campuses directly, or visit the catalogs and schedules web page at www.uaf.edu/uaf/academics/cat/.

Fall 2011

Registration and fee payment for degree-seeking students for fall 2011 semester begin ..... Monday, April 4
Registration and fee payment for non-degree-seeking students for fall 2011 semester begin ..... Wednesday, April 6
Deadline for applications for admission for fall semester (UA Scholars) ..... Sunday, May 1
Deadline for applications for admission for fall semester (graduate student) ..... Wednesday, June 1
Deadline for applications for admission for fall semester (undergraduate student) ..... Wednesday, June 15
Deadline to apply for summer 2011 graduation ..... Friday, July 15
Residence halls open, 8 a.m. ..... Sunday, Aug. 28
Orientation for new students ..... Sunday – Wednesday, Aug. 28 – Aug. 31
First day of instruction/late registration begins ..... Thursday, Sept. 1
Labor Day (offices closed — no classes, registration or fee payment) ..... Monday, Sept. 5
Deadline for adding classes, late registration and fee payment, 6 p.m. in person; midnight at UAOnline ..... Friday, Sept. 9
Deadline for 100 percent refund of tuition and fees ..... Friday, Sept. 9
Deadline for student-initiated and faculty-initiated drops (course does not appear on academic record) ..... Friday, Sept. 16
Deadline for 50 percent refund of tuition (tuition only, no fees refunded) ..... Friday, Sept. 16
Freshmen progress reports due ..... Friday, Oct. 7
Deadline to apply for fall 2011 graduation ..... Saturday, Oct. 15
Deadline for student-initiated and faculty-initiated withdrawals (W grade appears on academic transcript) ..... Friday, Oct. 28
Spring 2012 course listing available at UAOnline ..... Monday, Oct. 31
Registration and fee payment for degree-seeking students for spring 2012 semester begin ..... Monday, Nov. 14
Registration and fee payment for non-degree-seeking students for spring 2012 semester begin ..... Monday, Nov. 21
Thanksgiving holidays (most offices closed) ..... Thursday – Sunday, Nov. 24 – 27
Last day of instruction ..... Monday, Dec. 12
Final examinations ..... Wednesday – Saturday, Dec. 14 – 17
Residence halls close, noon ..... Sunday, Dec. 18
Deadline for faculty to post grades, noon ..... Wednesday, Dec. 21
Winter holiday — most offices closed (reopens Jan. 4 at 8 a.m.) ..... Saturday – Tuesday, Dec. 24 – Jan. 3

Spring 2012

Deadline for applications for admission for spring semester (graduate student) ..... Saturday, Oct. 15
Deadline for applications for admission for spring semester (undergraduate student) ..... Tuesday, Nov. 1
Registration and fee payment for degree-seeking students for spring 2012 semester begin ..... Monday, Nov. 14
Registration and fee payment for non-degree-seeking students for spring 2012 semester begin ..... Monday, Nov. 21
WINTERmester courses begin ..... Wednesday, Jan. 4
Deadline for WINTERmester student-initiated and faculty-initiated withdrawals (W grade appears on academic transcript) ..... Wednesday, Jan. 11
Alaska Civil Rights Day (most offices closed) ..... Monday, Jan. 16
Residence halls open, 8 a.m. ..... Tuesday, Jan. 17
Orientation for new students ..... Wednesday, Jan. 18
First day of instruction/late registration begins ..... Thursday, Jan. 19
Deadline for adding classes, late registration and fee payment, 6 p.m. in person; midnight at UAOnline ..... Friday, Jan. 27
Deadline for 100 percent refund of tuition and fees ..... Friday, Jan. 27
Deadline for student-initiated and faculty-initiated drops (course does not appear on academic record) ..... Friday, Feb. 3
Deadline for 50 percent refund of tuition (tuition only, no fees refunded) ..... Friday, Feb. 3
Summer 2012 course listings available at UAOnline ..... Monday, Feb. 6
Deadline to apply for spring 2012 graduation ..... Wednesday, Feb. 15
Deadline for UA Foundation and privately funded scholarship applications ..... Wednesday, Feb. 15
Freshmen progress reports due ..... Friday, Feb. 24
Summer Sessions registration begins ..... Monday, Feb. 27
Spring break (no classes) ..... Monday – Friday, March 12 – 16
University holiday (most offices closed for spring break) ..... Friday, March 16
Deadline for student-initiated and faculty-initiated withdrawals (W grade appears on academic transcript) ..... Friday, March 23
Fall 2012 course listings available at UAOnline ..... Monday, March 26
Registration and fee payment for degree-seeking students for fall 2012 semester begin ..... Monday, April 2
Registration and fee payment for non-degree-seeking students for fall 2012 semester begin ..... Monday, April 9
UAF SpringFest (no classes) ..... Friday, April 27
Last day of instruction ..... Friday, May 4
Final examinations ..... Monday – Thursday, May 7 – 10
Commencement ..... Sunday, May 13
Residence halls close, noon ..... Monday, May 14
Deadline for faculty to post grades, noon ..... Wednesday, May 16

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Welcome *to* UAF

This catalog is a complete guide to studying at the University of Alaska Fairbanks.

ACCREDITATION

UAF is accredited by the Northwest Commission on Colleges and Universities. Additionally it has the following specialized accreditations, certifications and standards:

- ABET
- Accrediting Council on Education in Journalism and Mass Communication
- Alaska Police Standards
- American Association of Museums
- American Bar Association
- American Chemical Society
- Association to Advance Collegiate Schools of Business
- Commission on Accreditation of Allied Health Education Programs: Dental Hygiene, Medical Assisting and Paramedic Program
- Commission on Dental Accreditation
- Computing Accreditation Commission of the Accreditation Board for Engineering and Technology
- Council on Social Work Education
- Federal Aviation Administration
- National Association of Schools of Music
- National Automotive Technicians Education Foundation
- National Council for Accreditation of Teacher Education and Alaska State Board of Education
- Society of American Foresters

Programs approved after this catalog was published are online at www.uaf.edu/catalog/current/addendum.html. Students enrolling for the first time should also refer to the registration guide, which is available in print at the Fairbanks campus and online at www.uaf.edu/register/. Search for courses available for registration at www.uaf.edu/coursefinder/. For a schedule of classes at any of UAF's community campuses, contact the campus directly. Addresses and phone numbers of campuses and UAF offices are listed on the inside back cover.

English majors Mami Takase, left, and Namiko Takato wave while hanging out in Cornerstone Plaza on the first day of class in the fall semester.

UAF photos by Todd Paris unless otherwise noted.

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Degrees and Programs at a Glance

	MINOR	CERTIFICATE	ASSOCIATE	BACHELOR'S	MASTER'S	DOCTORAL
Accounting, BBA	●			●		
Accounting, Applied, AAS	●		●			
Accounting Technician, Cert		●				
Airframe, Cert (see Aviation Maintenance)		●				
Airframe and Powerplant, Cert (see Aviation Maintenance)		●				
Alaska Native Languages	●					
Alaska Native Studies, BA	●			●		
American Sign Language	●					
Anthropology, BA, BS, MA, PhD	●			●	●	●
Apprenticeship Technologies, AAS			●			
Arctic Engineering, MS					●	
Arctic Skills	●					
Art, BA, BFA, MFA	●			●	●	
Arts and Sciences, BAS				●		
Asian Studies	●					
Associate of Arts, AA			●			
Associate of Science, AS			●			
Atmospheric Sciences, MS, PhD					●	●
Automotive Technology, Cert		●				
Aviation Maintenance, AAS			●			
Aviation Technology (see Piloting, Professional)	●					
Biochemistry and Molecular Biology, MS, PhD					●	●
Biological Sciences, BA, BS, PhD	●			●		●
Biology, MS, MAT					●	
Business Administration, BBA, MBA	●			●	●	
Business, Applied, AAS	●		●			
Business Management, Applied, Cert		●				
Chemistry, BA, BS, MA, MS	●			●	●	
Child Development and Family Studies, BA				●		
Civil Engineering, BS, MCE, MS				●	●	
Communication, BA	●			●		
Communication, Professional, MA					●	
Community Health, Cert, AAS		●	●			
Computer Engineering, BS				●		
Computer Science, BS, BS/MS, MS	●			●	●	
Construction Management, AAS			●			
Construction Trades Technology, Cert, AAS		●	●			
Counseling, Lic., MEd					●	
Creative Writing, MFA, MFA/MA (see English)					●	
Cross-Cultural Studies, MA					●	
Culinary Arts, Cert, AAS		●	●			
Dental Assistant, Cert, AAS (see Health, Allied)		●	●			
Dental Hygiene, AAS			●			
Diesel and Heavy Equipment, Cert		●				
Drafting Technology, Cert, AAS		●	●			
Early Childhood Education, Cert, AAS	●	●	●			
Earth Science, BA				●		
Economics, BA, BBA	●			●		
Economics, Resource and Applied, MS					●	
Education, Elementary, BA, Lic	●			●		

	MINOR	CERTIFICATE	ASSOCIATE	BACHELOR'S	MASTER'S	DOCTORAL
Education, Secondary, Lic						
Education, Lic, MEd	●				●	
Educator: Para-Professional, Cert, AAS		●	●			
Electrical Engineering, BS, MEE, MS				●	●	
Emergency Management, BEM				●		
Emergency Services, AAS	●		●			
Engineering, PhD						●
Engineering Management, MS					●	
English, BA, MA, MFA/MA	●			●	●	
Environmental Chemistry, MS, PhD					●	●
Environmental Engineering, MS					●	
Environmental Politics	●					
Environmental Quality Science, MS					●	
Environmental Studies, Cert		●				
Eskimo, Inupiaq, BA	●			●		
Eskimo, Yup'ik, BA	●			●		
Ethnobotany, Cert		●				
Film, BA				●		
Film Studies	●					
Fisheries, BA, BS, MS, PhD	●			●	●	●
Foreign Languages, BA	●			●		
General Science, BS, MS				●	●	
Geography, BA, BS	●			●		
Geological Engineering, BS, MS				●	●	
Geology, BS, MS, PhD	●			●	●	●
Geophysics, MS, PhD					●	●
Global Studies	●					
Health Care Reimbursement, Cert (see Health, Allied)		●				
High Latitude Range Management, Cert		●				
History, BA	●			●		
Human Services, AAS	●		●			
Indigenous Studies, PhD						●
Information Technology Specialist, Cert, AAS		●	●			
Instrumentation Technology, Cert		●				
Interdisciplinary Studies, AAS, BA, BS, BT, MA, MS, PhD			●	●	●	●
Japanese Studies, BA				●		
Journalism, BA	●			●		
Justice, BA	●			●		
Justice, Administration of, MA					●	
Law and Society	●					
Leadership and Civic Engagement	●					
Linguistics, BA	●			●		
Linguistics, Applied, MA					●	
Marine Biology, MS, PhD					●	●
Mathematics, BA, BS, MAT, MS, PhD	●			●	●	●
Mechanical Engineering, BS, BS/MS, MS				●	●	
Medical Assistant, Cert, AAS (see Health, Allied)		●	●			
Medical/Dental Reception, Cert (see Health, Allied)		●				
Military Science and Leadership	●					
Mineral Preparation Engineering, MS					●	

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	MINOR	CERTIFICATE	ASSOCIATE	BACHELOR'S	MASTER'S	DOCTORAL
Mining Applications and Technologies, Cert		●				
Mining Engineering, BS, MS	●			●	●	
Music, BA, BM, MA	●			●	●	
Native Language Education, Cert, AAS		●	●			
Natural Resources and Sustainability, PhD						●
Natural Resources Management, BS, MS	●			●	●	
Natural Resources Management and Geography, MNRMG					●	
Northern Studies, BA, MA	●			●	●	
Nursing Qualifications, Pre-, Cert (see Health, Allied)		●				
Oceanography, MS, PhD					●	●
Paralegal Studies, AAS	●		●			
Petroleum Engineering, BS, MS				●	●	
Philosophy, BA	●			●		
Physics, BA, BS, MS, MAT, PhD	●			●	●	●
Physics, Applied, BS				●		
Physics, Computational, MS					●	
Physics, Space, MS, PhD					●	●
Piloting, Professional, AAS			●			
Political Science, BA	●			●		
Power Generation, Cert		●				
Powerplant, Cert (see Aviation Maintenance)		●				
Process Technology, AAS			●			
Psychology, BA, BS	●			●		
Psychology, Clinical-Community, PhD						●
Renewable Resources, AAS			●			
Rural Development, BA, MA	●			●	●	
Rural Human Services, Cert		●				
Russian Studies, BA	●			●		
Safety, Health and Environmental Awareness Technology, Cert		●				
Science Management, MS					●	
Social Work, BA	●			●		
Sociology, BA, BS	●			●		
Software Engineering, MSE					●	
Statistics, MS	●				●	
Technology, BT				●		
Theatre, BA	●			●		
Tribal Management, Cert, AAS		●	●			
Veterinary Science, Cert		●				
Wildlife Biology and Conservation, BS, MS	●			●	●	
Women's and Gender Studies	●					
Yup'ik Language and Culture, BA				●		
Yup'ik Language Proficiency, Cert, AAS		●	●			

DEGREE CONCENTRATIONS

Many degree programs offer multiple concentrations in specific subject areas. Review degree program descriptions for information about available concentrations.

SPECIAL TRAINING PROGRAMS

Food Science and Nutrition, Law Enforcement Academy, Paramedic Academy, Welding and Materials Technology

OCCUPATIONAL ENDORSEMENTS

Administrative Assistant, Bookkeeping Technician, Entry Level Welder, Facility Maintenance, Financial Services Representative, Medical Billing*, Medical Coding*, Medical Office Reception*, Nurse Aide*, Rural Human Services, Rural Nutrition Services, Rural Utilities Business Management

PRE-PROFESSIONAL OPPORTUNITIES

Chiropractic, Dentistry, Law, Library Science, Medicine, Occupational Therapy, Pharmacy, Physical Therapy, Physician Assistant, Veterinary Medicine

GRADUATE CERTIFICATES/POST BACCALAUREATE CERTIFICATES

Construction Management, Education (K – 12, Special Education), Statistics

* See Health, Allied

ABBREVIATIONS

AA	Associate of Arts
AAS	Associate of Applied Science
AS	Associate of Science
BA	Bachelor of Arts
BAS	Bachelor of Arts and Sciences
BBA	Bachelor of Business Administration
BEM	Bachelor of Emergency Management
BFA	Bachelor of Fine Arts
BM	Bachelor of Music
BS	Bachelor of Science
BT	Bachelor of Technology
Cert	Certificate
Lic	Licensure issued by state of AK
MA	Master of Arts
MAT	Master of Arts in Teaching
MBA	Master of Business Administration
MCE	Master of Civil Engineering
MEd	Master of Education
MEE	Master of Electrical Engineering
MFA	Master of Fine Arts
MNRMG	Master of Natural Resources Management and Geography
MS	Master of Science
MSE	Master of Software Engineering
PhD	Doctor of Philosophy

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Overview *of* UAF

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A visitor to the Fairbanks campus pauses before a view of the Alaska Range.

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UAF Facts and Figures

- Originally founded in 1917 when Alaska was still a territory, today UAF is America's northernmost Land, Sea and Space Grant institution.
- UAF encompasses the central campus in Fairbanks; Bristol Bay Campus in Dillingham; Chukchi Campus in Kotzebue; Interior-Aleutians Campus, covering the Interior and the Aleutian Islands; Kuskokwim Campus in Bethel; Northwest Campus in Nome; and Community and Technical College in Fairbanks.
- UAF's geographically diverse student body represents all 50 states and 47 foreign countries.
- UAF offers 167 degrees and 33 certificates in 127 disciplines.
- As America's arctic university, UAF offers a number of unique programs and degrees particularly focused on the biology, climate, natural resources and peoples of northern latitudes, the circumpolar North and the Pacific rim.
- The UAF mascot is the Nanook, a derivation of "nanuq," the Inupiaq Eskimo word for polar bear. Up until the mid-70s, the men's basketball team was known as the "Flying Nanooks" because of the regular, and long, airplane rides they took in order to compete with other college teams. Since 1963 all University of Alaska Fairbanks sports teams have been called Nanooks.

Degrees Conferred, Spring 2010

- 66 occupational endorsements
- 34 recommendations for education licensure
- 840 certificates and associate or baccalaureate degrees
- 263 master's and doctoral degrees

Student Profile, Fall 2010

ENROLLMENT

Fairbanks Campus	5,787
Community and Technical College	3,681
Bristol Bay Campus	717
Chukchi Campus	343
Interior-Aleutians Campus	487
Kuskokwim Campus	387
Northwest Campus	602
Center for Distance Education	1,872
University of Alaska Fairbanks (total*)	11,034

** Some students attend more than one campus and are not counted twice in the total.*

• Female	59%
• Male	41%
• Alaska Native/American Indian	21%
• Undergraduate	89%
• Graduate	11%
• Median age	25

Estimated 2011 – 2012 UAF Annual Costs

	ALASKA RESIDENT	NON-RESIDENT	WUE*
FRESHMEN AND SOPHOMORES			
Tuition and fees** *(30 credits, 100-200-level classes)*	$5,570	$17,443	$7,927
Room and board *(double room & 19 meals/week on campus)*	6,960	6,960	6,960
ANNUAL TOTAL	$12,530	$24,403	$14,887
JUNIORS AND SENIORS			
Tuition and fees** *(30 credits, 300-400-level classes)*	$6,580	$18,453	$9,441
Room and board *(double room & 19 meals/week on campus)*	6,960	6,960	6,960
ANNUAL TOTAL	$13,540	$25,413	$16,401
GRADUATE STUDENTS			
Tuition and fees** *(18 credits, 600-level classes)*	$7,640	$14,764	
Room and board *(double room & 19 meals/week on campus)*	6,960	6,960	
ANNUAL TOTAL	$14,600	$21,724	

* *Western Undergraduate Exchange (see page 64)*

** *Includes Wood Center student life, student government, technology, transportation, UA network, athletics, Student Recreation Center and health center fees. Does not include health insurance, books, supplies, parking, sustainability, travel, miscellaneous expenses or special costs associated with international or exchange students. Costs are subject to change.*

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The UAF Experience

UAF — Then and Now

UAF's Fairbanks campus is located four miles west of downtown Fairbanks on a low ridge overlooking the Chena and Tanana river floodplains. Artifacts found on the bluff tell us tribal groups used the hill beginning perhaps 3,500 years ago. It offered a wide view of the flats below and probably served as a base camp for hunting and gathering.

THE EARLY YEARS

Gold discoveries in the early 1900s brought sudden changes to the Tanana Valley. In 1906 the hill where UAF now stands became part of a federal Agricultural Experiment Station, and in 1915 the U.S. Congress approved money and transferred a piece of land from this station to establish a school of higher education. The institution began as the Alaska Agricultural College and School of Mines, focusing on research and teaching in support of agriculture and mining. Two years later the Alaska Territorial Legislature added funding, and in 1922, when the first building was completed, the college opened its doors to students. In the first semester, a faculty of six offered 16 classes to a student body of 12. Commencement in 1923 consisted of a single graduate.

The institution quickly began to grow. In 1931 the federal government transferred the entire Agricultural Experiment Station to the college. In 1935 the Alaska Territorial Legislature changed the institution's name to the University of Alaska to reflect the school's expanding role in research, teaching and public service for all Alaska. By then, faculty and course offerings had grown to include liberal arts, science and engineering.

World War II brought a rapid influx of population and development to the territory. Wartime national awareness of the need for scientific polar research in the interests of defense and communications led to the establishment in 1946 of the Geophysical Institute. Since its inception, the GI has earned an international reputation for studies of the Earth and the physical environment at high latitudes. The university awarded its first Ph.D. degree to a geophysics student in 1955.

STATEHOOD AND BEYOND

The University of Alaska had a significant role in the statehood movement of the 1950s, when the Constitutional Convention was held on campus. The Alaska Constitution was drafted in what is now Constitution Hall and signed in stately Signers' Hall, now the home of UAF student service and administrative offices. Alaska became the nation's 49th state in 1959.

Research expanded broadly in the decade of the 1960s with the establishment of institutes in several disciplines. The Alaska Legislature created the Institute of Marine Science in 1960 and the Institute of Arctic Biology two years later. Since 1969 the Geophysical Institute has operated Poker Flat Research Range, providing launch facilities for NASA and the Department of Defense. Poker Flat is the only university-owned rocket range in the world.

In 1970 the university was designated a federal Sea Grant institution for marine research. Alaska Sea Grant develops and supports research, education, and outreach programs and partnerships to help sustain economic development, traditional cultural uses, and conservation of Alaska's marine, estuarine and coastal watershed resources. Stations in Kodiak and Juneau are also actively involved in marine and fisheries research.

In 1972 the Alaska Legislature established the Alaska Native Language Center and provided operating funds. Since then the university has supported research, documentation and teaching of the state's 20 Native languages.

To meet the need for expanding services for all Alaskans, the University of Alaska statewide system was created in 1975. Campuses in Anchorage and Juneau were assigned their own chancellors and central staffs, with the statewide administration and overall university president remaining in Fairbanks.

Meanwhile, the main campus in Fairbanks continued to expand. The University of Alaska Museum of the North, one of the state's most popular visitor attractions, moved into the Otto Geist Building in 1980. An expansion completed in 2006 nearly doubled the museum's size, and added a research center, a learning center and an Alaska art gallery. The museum's unique collection offers the public a view of the rich and varied cultures of the North.

In 1981, UAF enrollment topped 5,000 students for the first time. The university also began to emphasize its shared scholarship and global education efforts in a series of agreements with schools in Japan, Denmark, Canada, India, People's Republic of China, Russia and other countries. The institution branched out to include campuses in Bethel, Dillingham, Kotzebue, Nome and the Interior. Learning centers in other communities such as Fort Yukon, Galena, McGrath, Nenana, Tok and Unalaska provide additional education services to rural Alaskans.

UAF's public service role is filled in part by the statewide Cooperative Extension Service with its 13 district offices. Public broadcasting stations KUAC FM and AlaskaONE TV, the first public stations in the state, are headquartered at UAF.

In 1991 NASA named UAF a Space Grant institution for aerospace research, making it a Land, Sea and Space Grant institution, one of only a handful of triple-crown universities in the country.

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TODAY

UAF's colleges and schools offer degrees and certificates in 128 disciplines with a variety of vocational and technical programs. Graduate degrees are available in a wide range of academic study. UAF is internationally known for its Pacific Rim and circumpolar North research. It is consistently among the top 100 universities in the nation for funding from the National Science Foundation. UAF is the only doctoral degree-granting institution in Alaska, offering Ph.D. degrees in anthropology, indigenous studies, several of the physical and natural sciences, psychology, mathematics and engineering. Master's degrees are offered in almost 60 fields in the humanities, social sciences, northern studies, physical and natural sciences, and in professional fields such as engineering, justice, education and business administration. Interdisciplinary programs are possible for students who have a research focus in areas where UAF has faculty expertise and research facilities available.

In 2009 Alaska celebrated 50 years of statehood. The university on the hill has made important contributions to the state throughout that half-century, helping find solutions to the state's unique challenges in areas like arctic engineering, wildlife biology, health care and education. UAF helps power Alaska's economy by turning students into professionals for Alaska's workforce.

Students

Individualism and diversity are Alaska traditions. At UAF, students find not only a broad mix of cultures and ages, but also a climate of respect for individual rights and preferences. A student from a rural Alaska village can share knowledge and insights with others from places as distant as Tallahassee or Tokyo. UAF's enrollment in the fall of 2010 was 11,034 students. Of those, 59 percent are female and 41 percent male; 89 percent are undergraduate and 11 percent are graduate students. UAF students hail from all 50 states and 47 foreign countries.

Many UAF students are "nontraditional." They study at night or after work and balance schoolwork with family responsibilities. The university offers a wide variety of evening and weekend classes. A number of students live in remote areas of the state and attend classes through distance delivery. Using computers, telephones and the latest Internet technology, students can work toward their degrees without leaving home.

Many students take advantage of UAF exchange programs to study in colleges and universities around the world, or through the National Student Exchange program, which offers studies at universities throughout the United States. There are 130 different student organizations on campus, with that number going up all the time. Students produce the weekly *Sun Star* newspaper, run KSUA, the campus radio and television station, and participate in scores of special interest groups.

Faculty

At UAF you find faculty members who are among the best in the country, and because of the low 12 – 1 student/faculty ratio, you receive more personal attention here than you would at almost any other public university in the nation. Once you have chosen a major, you will be assigned a faculty advisor from your academic department. Your advisor will help you choose classes each semester and will explain programs and requirements. You will get to know the faculty not just as professors, but as friends, advisors and mentors. Education is an individual process, different for each person. At UAF, you will be treated as an individual, not just a face in the crowd.

UAF's Mission

The University of Alaska Fairbanks, the nation's northernmost Land, Sea, and Space Grant university and international research center, advances and disseminates knowledge through teaching, research and public service with an emphasis on Alaska, the circumpolar North and their diverse peoples. UAF — America's arctic university — promotes academic excellence, student success and lifelong learning.

CORE THEMES

- **Educate:** Undergraduate and graduate students
- **Discover:** Through research, scholarship and creative activity, including an emphasis on the North and its peoples
- **Prepare:** Alaska's career, technical and professional workforce
- **Connect:** Alaska Native, rural and urban communities through contemporary and traditional knowledge
- **Engage:** Alaskans via lifelong learning, outreach, and community economic development

Commitment to Quality

UAF has been accredited since 1934 by the Northwest Association of Schools and Colleges. UAF acts continuously to assess and improve the educational experience for its students. Students evaluate their teachers at the end of each semester; those student opinion reports are available for review at Rasmuson Library. Faculty and administrators evaluate courses in the core curriculum every year. Each degree program and certificate is assessed at least every five years. Results are used to change and improve the education provided by UAF. The learning outcomes expected for each degree program can be viewed at www.uaf.edu/provost/assessment-review/assessment/.

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Campuses

Fairbanks Campus

The 2,250-acre Fairbanks campus offers limitless opportunities for activity and recreation. The main campus has two lakes and miles of trails as well as a major student recreation complex for indoor sports. Facilities are available for basketball, volleyball, badminton, tennis, calisthenics, dance, gymnastics, judo and karate. There are rifle and pistol ranges; courts for handball, racquetball and squash; a jogging track; a swimming pool; weight training and modern fitness equipment areas; an ice arena for recreational skating and hockey; a special aerobics area; and a two-story climbing wall. UAF sponsors intercollegiate athletic teams in men's and women's basketball, men's and women's cross country running and skiing, coed rifle, men's ice hockey and women's volleyball and swimming.

The Wood Center is the focus of many extracurricular activities. With a pub, snack bar, food court, bowling lanes, conference rooms, lounge and games area, the Wood Center is a gathering place for the entire university community.

UAF has some of the best facilities in the state. Performances are scheduled almost every weekend during the academic year in Davis Concert Hall or Salisbury Theatre. The Rasmuson Library, Alaska's largest, offers extensive resource materials in print and online. An array of computer databases provides access to hundreds of academic journals, and Internet connections allow students at remote rural sites to use library resources. The UA Museum of the North is not only one of the top visitor attractions in the state but also a resource for students. Its vast collections are used for demonstration and comparative studies in classrooms and labs.

The Fairbanks campus is the statewide university system's principal research center. Internationally respected institutes provide students with an opportunity to see science in action and participate in research activities.

FAIRBANKS AREA

Fairbanks, Alaska's second largest city, sits on the banks of the Chena River in the heart of Alaska. From the UAF campus, the downtown district is easily accessible via the local bus system and a network of bike trails. The city is steeped in a history of riverboat captains and gold seekers. Its character has been shaped by a large military presence, construction of the Trans-Alaska Pipeline and the continuing oil economy, and a thriving university. It is a city where old quietly blends with new. Striking modern buildings sit side-by-side with log cabins built in the early part of the last century.

With a population of more than 97,500, Fairbanks offers the conveniences of a big city, yet millions of acres of rolling hills and spectacular Alaska panoramas are only minutes away. Mount McKinley or Denali (Koyukon Athabascan for "The High One"), the highest mountain in North America, is often visible from many UAF residence hall windows. Whether the sport is canoeing, climbing, running, dog mushing, skiing or fishing, nowhere else compares with Alaska.

TRANSPORTATION TO FAIRBANKS

Fairbanks is easily accessible by land or air. Anchorage is 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 between Fairbanks and Anchorage, Seattle and many other destinations.

The Alaska Railroad provides a special one-way fare between Anchorage and Fairbanks for all full-time UAF students in summer or regular sessions. Students must ask for the special rate when making reservations and present their student ID to the ticket agent at check-in. For reservations, contact the Alaska Railroad at 907-458-6025 or 800-544-0552.

Community Campuses

In addition to its main Fairbanks campus, UAF has community and rural campuses in downtown Fairbanks, Bethel, Dillingham, Kotzebue and Nome, and maintains six community centers through its Interior-Aleutians Campus in Fairbanks. These branches, part of the College of Rural and Community Development, are central to fulfilling the UAF mission of providing educational opportunities throughout the state. Credits earned at any UAF campus or center are recognized at all UAF campuses, meaning that students may change campuses and transfer all UA credits.

For more information about the College of Rural and Community Development, visit www.uaf.edu/rural/.

BRISTOL BAY CAMPUS IN DILLINGHAM

The Bristol Bay Campus is situated in a 55,000-square-mile region bounded by Bristol Bay, the Bering Sea and the Pacific Ocean. The administrative center is located in Dillingham (about 322 air miles from Anchorage and 570 air miles from Fairbanks) with centers in King Salmon, Togiak and Iliamna. The Bristol Bay Campus serves 32 rural communities as far south as Ivanoff Bay, into the north at Port Alsworth, and west to Togiak.

Enrollment at Bristol Bay Campus ranges from 500 to 800 students. The campus offers an associate of arts degree in general studies and associate of applied science degrees in applied business, community health, early childhood education, human services, information technology, interdisciplinary studies, office management and technology and

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Troth Yeddha'

The land now occupied by the University of Alaska Fairbanks campus was called Troth Yeddha' (wild potato hill) by the Tanana Athabascans. The late Traditional Chief Peter John of Tanana Chiefs Conference of Interior Alaska said, "Our people used to come to this hill to pick Troth. They would paddle up the creek, Troth Yeddha' No, and camp by the lake, Troth Yeddha' Mena. Troth Yeddha' was important, a meeting place. The grandfathers used to come to talk and give advice to one another about what they were going to do. When they learned this place would be used for a school, the university, they came here one last time, to decide what they should do. They decided that the school would be good and would carry on a very similar traditional use of this hill—a place where good thinking and working together would happen. They placed an eagle feather on a pole. This was to let all the people know that the Dena would no longer be using the ridge for a meeting place or to pick wild potatoes. They were also giving a blessing to their grandchildren who would be part of the new school." Chief Peter John described himself and explained the gesture as "I am Bedzeyh te xwt'ana, caribou clan. My wife is Taneedzo ghetseel na, middle clan. I am proud of it. I am an Indian. What does it mean to put an eagle feather with the United States flag? The eagle feather is connected with the clan. It is a symbol of us. We are part of this new nation. People from all over the world come to the university to go to school and teach. We have something in common. Something all American people can share in. Be proud of it. Make it all the way, not just part way."

renewable resources. Bachelor's degrees are offered in elementary education, interdisciplinary studies, rural development and social work. Master's degrees are offered in rural development and education.

The Bristol Bay Campus also provides educational opportunities for the communities within its service area, including vocational-technical, community interest and graduate courses. Classes are offered by distance delivery (audio-conference, video-teleconference, correspondence or Internet) and by instructors using traditional methods. For more information, visit www.uaf.edu/bbc/.

CHUKCHI CAMPUS IN KOTZEBUE

The Chukchi Campus is located 26 miles north of the Arctic Circle on the shores of the Chukchi Sea. The campus serves Kotzebue and 10 villages in a region of more than 36,000 square miles. Chukchi offers associate of arts as well as associate of applied science degrees, and courses leading to baccalaureate degrees in education, rural development and social work. Courses are offered by local instructors and through the College of Rural and Community Development audio-conferencing and live Internet instructional systems. For more information, visit www.uaf.edu/chukchi/.

COMMUNITY AND TECHNICAL COLLEGE CAMPUS IN FAIRBANKS

The Community and Technical College fulfills UAF's community college mission in the greater Fairbanks area by offering quality certificate, degree and specialized training programs. Its core purpose is to provide community-driven education to meet needs for workforce development, academic preparation and lifelong learning. CTC helps prepare Alaskans for Alaska's jobs.

CTC offers more than 40 certificate and degree programs such as allied health and nursing, process technology, applied business and accounting, paramedic and law enforcement academies, information technology, fire science, aviation, and early childhood education.

CTC benefits from strong partnerships with local employers in business, industry and organized labor. Many CTC faculty come from active workplace settings, ensuring that CTC students learn from people at the forefront of their professions.

Many CTC classes are held during evenings or weekends; the campus also offers a growing array of courses online. CTC specializes in meeting the needs of non-traditional students who have been away from college or whose work and family obligations make full-time student status challenging as well as traditional students entering college for the first time.

CTC's main campus is located at 604 Barnette Street in downtown Fairbanks. At the Student Assistance and Advising Center, students can receive academic advising, register and pay for classes, and take placement tests.

Additional CTC locations in Fairbanks and other communities include:

- Automotive Technology Center: 3202 Industrial Ave.
- Bunnell House Early Childhood Lab School: 703 Chatanika Dr.
- Cosmetology Center: 505 Old Steese Highway
- Fairbanks Pipeline Training Center: 3600 Cartwright Ct.
- Hutchison Institute of Technology: 3750 Geist Rd.
- University Park Building: 1000 University Ave.
- Offices on Fort Wainwright and Eielson Air Force Base
- Partnership office at Delta Career Advancement Center in Delta Junction

For more information contact CTC at 907-455-2800 or visit www.ctc.uaf.edu.

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INTERIOR-ALEUTIANS CAMPUS

The Interior-Aleutians Campus in Fairbanks serves 61 towns and villages within the Doyon region and the Aleutians/Pribilof Islands, an area of about 200,000 square miles. The Interior-Aleutians Campus is the most decentralized of the UAF campuses. Although the director's office and some faculty are located in Fairbanks, there are Interior-Aleutians Campus centers in Fort Yukon, Galena, McGrath, Nenana, Tok and Unalaska. Courses are offered throughout the region via distance delivery, on site by local or visiting instructors, and by correspondence. The campus offers a range of degree programs, including associate of arts and associate of applied science in construction trades technology, educator: paraprofessional, rural human services, tribal management and veterinary science. Programs for math success and support for future teachers are also available. For more information, visit www.uaf.edu/iac/.

KUSKOKWIM CAMPUS IN BETHEL

The Kuskokwim Campus is located in Bethel, and serves approximately 25,000 people in the Yukon-Kuskokwim Delta region of the state, which includes 47 remote Alaska Native Yup'ik and Cup'ik Eskimo and Athabaskan villages with 56 tribes in a 57,000 square-mile-area the size of Illinois. Bethel is a community of about 6,000 people 80 miles inland on the Kuskokwim River. The Kuskokwim Campus offers academic, vocational and community interest courses, as well as courses leading to associate, baccalaureate and master's degrees, including a bachelor's degree in Yup'ik language and culture. The Emerging Scholars Program is designed to assist all full-time freshmen in the transition to college, both academically and socially, and in the completion of certificates and degrees. The campus also sponsors one-week summer "Talent Search" programs to prepare incoming students for college. Students may attend classes on campus and through distance delivery. Housing on campus is available in Sackett Hall, which provides suites with space for four students in each. For more information, visit www.bethel.uaf.edu.

NORTHWEST CAMPUS IN NOME

Northwest Campus is located in Nome, a community of 3,500 that is the service hub for the 15 villages of the Bering Strait region. This 44,000-square-mile region extends from Shishmaref on the northern edge of the Seward Peninsula to Stebbins on the southern rim of Norton Sound. It includes communities on St. Lawrence and Little Diomede islands. The area contains 570 miles of coastline, which includes all of Norton Sound and portions of the Bering Sea and Arctic Ocean.

The Northwest Campus serves a total population of nearly 10,000. Certificates and associate, bachelor's and master's degrees are offered to the region's residents, with courses taught both traditionally and by distance delivery. Affiliated learning centers are located in the communities of Shishmaref, Savoonga, St. Michael and Unalakleet. The campus responds to vocational, business development, cultural preservation and academic needs of the Bering Strait region. Many courses, programs and degrees are offered in cooperation with regional health and tribal organizations, school districts and corporations. For more information, visit www.nwc.uaf.edu.

CENTER FOR DISTANCE EDUCATION

UAF has been a leader since 1963 in offering courses and programs for students throughout Alaska and the world. The Center for Distance Education offers more than 170 courses in 43 disciplines. About 90 percent of the courses are offered online — often called e-learning — and 55 percent are offered as print-based independent learning courses; many are offered both ways. Internet-based e-learning provides an opportunity for students to further their education without the constraint of classroom attendance or, in some cases, the traditional semester time period. Students are guided through courses using course content developed by university-approved experts and CDE's instructional design team.

For more information, see Independent Learning on page 41, contact the Center for Distance Education at 2175 University Avenue South in Fairbanks, by phone at 800-277-8060 or 907-479-3444, via email at distance@uaf.edu or at http://distance.uaf.edu.

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Colleges and Schools

UAF colleges and schools offer programs leading to occupational endorsements, certificates and associate, bachelor's and master's degrees in the arts, sciences and professions. Doctoral programs are available in areas of particular strength, such as sciences and mathematics.

EDUCATION

The School of Education prepares professional educators for Alaska's unique geographic, cultural and linguistic conditions. Course work and fieldwork in a broad range of undergraduate and graduate programs are available to students on the Fairbanks campus and by distance delivery to rural areas. Programs offered respond to recent standards developed by the National Council of Accreditation of Teacher Education and the Alaska Teacher, Student and Cultural Standards.

Undergraduate degree programs and post-baccalaureate endorsement programs lead to State of Alaska teaching certificates in elementary and secondary education. Our guidance and counseling program leads to a master's degree and a state of Alaska "Type C" certificate. Professional development programs leading to master of education (M.Ed.) degrees include counseling, cross-cultural education, elementary, secondary, special education, and curriculum and instruction.

School of Education staff and faculty work closely with colleagues at the CRCD campuses and school districts across the state to prepare well-qualified pre-service educators and offer professional development opportunities to practitioners. Faculty research focuses on issues of formal and non-formal education related to Alaska Native people and communities, cross-cultural contexts, distance education, indigenous populations and rural issues.

The School of Education Advising Office offers experienced, full-time personnel who provide advice about SOE programs on a drop-in or appointment basis and provide appropriate referrals for financial aid and other information students and interns need. School of Education rural grants, in partnership with rural school districts and UAF community campuses, provide various types of support for rural and Alaska Native students seeking to become teachers, counselors and school leaders. For more information, call 907-474-7341 or visit www.uaf.edu/educ/.

ENGINEERING AND MINES

The College of Engineering and Mines includes the academic departments of civil and environmental engineering, computer science, electrical and computer engineering, mechanical engineering, mining and geological engineering, petroleum engineering and the research arm of the unit, the Institute of Northern Engineering. INE houses the Advanced Materials Group, the Alaska Center for Climate Assessment and Policy, the Alaska Center for Energy and Power, the Alaska University Transportation Center, the Mineral Industry Research Laboratory, the Petroleum Development Laboratory, the Transportation Research Center and the Water and Environmental Research Center.

CEM offers students a challenging academic experience that will allow them to contribute, compete and succeed in today's global economy. The college offers programs leading to undergraduate and graduate degrees in civil engineering, computer engineering, computer science, electrical engineering, arctic engineering, engineering management, environmental quality engineering, environmental quality science, geological engineering, mechanical engineering, science management, mining engineering, mineral preparation engineering and petroleum engineering. An engineering Ph.D. program is also offered.

The baccalaureate degree programs in civil, electrical, geological, mechanical, mining and petroleum engineering, and computer science are accredited by ABET.

CEM's academic programs provide a basis for advanced study or specialized careers. CEM students benefit from small class sizes through increased interactions with faculty and other students and excellent access to instructional laboratories. The college provides opportunities for undergraduate and graduate students to participate in research. Theoretical and practical hands-on knowledge, in tandem with discipline-related research, provides CEM students with the expertise and training they need for their chosen career path.

CEM departments are active in outreach activities such as Engineering Week, Science Potpourri, the Alaska Summer Research Academy, the Alaska Native Science and Engineering Program, educational workshops, the fundamentals of engineering examination review course and a range of short courses for the professional engineering community. Visit www.uaf.edu/cem/ or call 907-474-7730 for more information.

FISHERIES AND OCEAN SCIENCES

The School of Fisheries and Ocean Sciences is responsible for statewide programs relating to Alaska's vast marine and freshwater environments and fisheries.

Marine education, research, fishery technology and extension work are conducted through several departments of the school. The Institute of Marine Science, with major laboratory facilities in Fairbanks and at the Seward Marine Center, focuses on oceanographic research and education. Kasitsna Bay near Homer is the site of a coastal laboratory with spectacular intertidal and subtidal communities. The Global Undersea Research Unit in Fairbanks emphasizes the use of submersibles, remotely operated vehicles, and other undersea observing systems. The Juneau Center is adjacent to the NOAA Fisheries Auke Bay laboratory and near regional laboratories and headquarters of several state and

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federal agencies. The Fishery Industrial Technology Center at Kodiak houses research in seafood science and sustainable harvest technology. The Marine Advisory Program offers public education and outreach statewide from its offices in Anchorage and several coastal communities.

The school offers the B.S. degree in fisheries through the fisheries division. M.S. and Ph.D. degrees are offered in oceanography, marine biology and fisheries. Students can pursue studies in seafood science through the interdisciplinary program. Undergraduate fisheries majors are prepared for graduate study or to enter management, private industry or other fields. Fieldwork opportunities are available to undergraduate students through cooperating state and federal agencies. Graduate students prepare for careers including university research and education, and research or management with state and federal agencies and private industry. As part of their degree programs, graduate students conduct research in collaboration with faculty, often in remote locations throughout the oceans and seas around Alaska. For more information, visit www.sfos.uaf.edu or call 907-474-7824.

GRADUATE SCHOOL

UAF offers professional licenses, graduate certificates, master's degrees and the doctor of philosophy degree in a number of areas. The Graduate School also manages UAF's unique interdisciplinary program where students can work on individualized degrees related to current issues. See the graduate degree requirements and specifics on programs offered.

The Office of the Graduate School provides information and assistance for prospective and current graduate students, including orientation, teaching assistant training and several scholarship and fellowship programs. Information can be found at www.uaf.edu/gradsch/ or by calling 907-474-7464.

LIBERAL ARTS

As one of the largest colleges at Alaska's research university, UAF's College of Liberal Arts supports scholarship that furthers understanding of Alaska and the circumpolar region in a changing global context. Extensive research and creative work informs our teaching to provide students with opportunities to become knowledgeable in and across the arts and humanities, social and behavioral sciences; to develop expertise in specific areas of concentration; and to participate in exciting research both as a graduate student and as an undergraduate. The college provides learning opportunities beyond the classroom that foster responsibility, understanding of vital issues and commitment to place. Core curriculum courses provide breadth to the general education of all UAF undergraduates, while liberal arts undergraduate and graduate programs ground students in their disciplines. More information is available at www.uaf.edu/cla/ or by calling 907-474-7231.

MANAGEMENT

School of Management undergraduate programs in accounting, business administration, economics and emergency management 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 generalists with special knowledge about Alaska, the Pacific Rim and the circumpolar North. Three degree programs — the bachelor of business administration, the B.B.A. concentration in accounting and the master of business administration — are nationally accredited by the Association to Advance Collegiate Schools of Business. Only 175 of 607 accredited member institutions of the AACSB have additional specialized accreditation for their accounting programs. All degree programs cover problems and circumstances appropriate to Alaska. These include entrepreneurship, human resource management, international business, regulation, financial institutions and markets, natural resource economics, and a comprehensive professional program in accounting. Additional information is available at www.uaf.edu/som/ or by calling 907-474-7461.

NATURAL RESOURCES AND AGRICULTURAL SCIENCES

Graduates of the School of Natural Resources and Agricultural Sciences use their academic training to facilitate the wise management of renewable resources. Undergraduate programs lead to bachelor's degrees in geography with options in circumpolar north and Pacific Rim studies, environmental studies, landscape analysis and climate change studies, and geographic information science and technology, or in natural resources management with options in resources, high-latitude agriculture, and forest sciences. The forest sciences option is accredited by the Society of American Foresters, which is recognized by the Commission on Recognition of Postsecondary Accreditation as the specialized accrediting agency for forestry in the United States.

Graduate students may earn master of science degrees in natural resources management or natural resources management and geography. A doctorate in natural resources and sustainability is also available.

Faculty and students conduct research at the Agricultural and Forestry Experiment Station, which includes research centers and experiment farms in Fairbanks and Palmer, the Forest Soils Laboratory in Fairbanks, and field sites around the state. SNRAS developed its courses and programs in close cooperation with many university units, private industry, and local, state and federal agencies. These cooperative arrangements provide students with opportunities for fieldwork and internships in the degree options listed above, as well as in outdoor recreation, water resources management, park and wilderness management, geographic information systems and research planning and administration. For more information visit www.uaf.edu/snras/ or call 907-474-5276.

NATURAL SCIENCE AND MATHEMATICS

The College of Natural Science and Mathematics offers undergraduate and graduate degrees in the physical and life sciences, statistics and mathematics. CNSM provides most UAF undergraduate courses in science and mathematics, including the baccalaureate core science curriculum and a variety of outreach programs. The college is known for use

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of modern teaching technologies, access to professors and quality undergraduate student advising. CNSM also offers minors in each of its major disciplines.

Academic programs are designed to provide a foundation for professional careers or advanced study. CNSM majors enjoy close working relationships with faculty and other students. The college provides opportunities for undergraduate and graduate students to work with faculty on research projects. Unique opportunities are available through UAF research centers and institutes, including the Engineering, Science and Technology Experiment Station, the Geophysical Institute, the Institute of Arctic Biology, the UA Museum of the North and the International Arctic Research Center.

CNSM also hosts the Alaska Summer Research Academy, the Alaska Native Science and Engineering Program and Girls on Ice. In these and other programs, high school and university students work with CNSM faculty on original research projects aimed at improving the qualify of life in Alaska. The fundamental knowledge gained through courses and working on practical, discipline-related projects provides CNSM graduates with the skills and experience they need to enter the job market or continue their education.

At the graduate level, CNSM offers master of science and master of arts in teaching degrees in the natural sciences and mathematics. These advanced programs provide students with research opportunities in laboratory and field settings throughout Alaska. Doctoral programs offered by CNSM departments provide opportunities for advanced study leading to academic and professional positions. For more information, visit www.uaf.edu/cnsm/ or call 907-474-7608.

RURAL AND COMMUNITY DEVELOPMENT

The College of Rural and Community Development focuses on the needs of non-traditional students, including students who seek skills and degrees suited to the economy and well-being of rural communities. CRCD promotes workforce preparation, economic development, lifelong learning and community development. CRCD campuses provide general and vocational/technical education at the certificate and associate degree levels, baccalaureate and graduate degrees in rural development, and, in cooperation with the College of Liberal Arts and the School of Education, baccalaureate and graduate degrees in cross-cultural studies, education and social work. In addition, CRCD offers workshops, continuing education and short-term courses, developmental studies, credit for prior learning and other non-degree-oriented services.

CRCD community campuses include Northwest (Nome), Kuskokwim (Bethel), Bristol Bay (Dillingham), Chukchi (Kotzebue), Interior-Aleutians (Fairbanks, which administers six centers throughout the Interior and the Aleutian Islands), and the Community and Technical College (downtown Fairbanks). The Center for Distance Education provides a variety of distance-delivered courses for degree and non-degree programs throughout the university.

CRCD serves nearly two-thirds of Alaska, encompassing 160 primarily Alaska Native arctic, subarctic and coastal communities. At least 16 indigenous languages are spoken in the region served by CRCD, and the economy spans subsistence hunting and fishing, small-scale village development and cooperatives, and large-scale international corporate development. The College of Rural and Community Development focuses on responding to students and partners to develop the economic and social well-being of Alaska Native communities and beyond. For more information, visit www.uaf.edu/rural/ or call 907-474-7143.

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Research Institutes and Centers

UAF's location in Interior Alaska provides easy access to glaciers, permafrost, the Pacific and Arctic oceans, and other elements of a subarctic climate. Accordingly, several research centers and academic departments focus their scholarly work on issues particular to the North. These include the environmental impact of human activities, development of renewable and nonrenewable resources and energy sources, and the understanding and preservation of indigenous northern peoples and cultures.

The vice chancellor for research oversees all university research activities, with primary responsibility for overseeing and advancing the university's research mission. The Center for Research Services directs the development of university research policies and oversees sponsored programs, research integrity, and intellectual property and licensing.

Assistantships are available for graduate students working on research with faculty in many research institutes and centers. Each researcher has a joint appointment with an academic department. Any student interested in specific faculty research projects and the availability of assistantships should contact the appropriate academic department.

AGRICULTURAL AND FORESTRY EXPERIMENT STATION

The Agricultural and Forestry Experiment Station conducts research to enhance the quality of life in Alaska through development of natural, economic and human resources. Research emphasizes factors typical of high latitudes and is designed to provide the information and technology needed to manage renewable resources for the economic and social well-being of Alaskans. This work includes studies of natural and manipulated ecosystems, sustainable soil productivity, food security, genetics for improved plant and animal productivity and enhanced livestock production. Additional research involves economic and legal aspects of resource use, silviculture and forest management, resource use for tourism and recreation, and education and communications in resources management. UAF soil scientists are part of an international team studying the carbon flux in arctic tundra soils as it affects global change.

AFES, in cooperation with state and federal agencies, conducts research at centers in Fairbanks, Palmer, Delta Junction and Nome. AFES faculty have a leadership role in the Long-Term Ecological Research program funded by the National Science Foundation. This research, which is determining the structure and function of northern boreal forest ecosystems, forms the basis for sustainable forest management practices.

AFES faculty at the Fairbanks research center represent the disciplines of agronomy, animal science, economics, food science, forestry, horticulture, land use planning, outdoor recreation, plant pathology, resource policy and law, and soil science. The Palmer research center supports faculty in agronomy, horticulture, range science and soil science. For more information, visit www.uaf.edu/snras/afes/ or call 907-474-7083.

ALASKA COOPERATIVE FISH AND WILDLIFE RESEARCH UNIT

The Cooperative Fish and Wildlife Research Unit is jointly sponsored and financed by UAF, the U.S. Geological Survey, the Alaska Department of Fish and Game, the U.S. Fish and Wildlife Service and the Wildlife Management Institute. The unit supports and guides graduate training in fishery and wildlife biology and management.

Fisheries research focuses on the ecology and fisheries of Alaska fresh water ecosystems, and evaluation and development of cold-water fisheries techniques. Wildlife research is directed toward habitat relationships, avian ecology, wildlife population dynamics, and the impact of northern development on wild animals and their habitats. For more information, visit www.akcfwru.uaf.edu or call 907-474-7661.

ALASKA NATIVE LANGUAGE CENTER

The Alaska Native Language Center was established by state legislation in 1972 to document and preserve the 20 Indian, Aleut and Eskimo languages in Alaska. It is the major center in the United States for the study of Eskimo and Northern Athabascan languages. ANLC publishes its findings in dictionaries, grammars, story collections and research papers. The center's library houses a valuable collection of manuscript materials in and on Alaska Native languages, including word lists and documentation dating to the late 1700s. The ANLC library is available for use by scholars and students.

As part of the College of Liberal Arts, ANLC's teaching program offers a B.A. in Yup'ik or Inupiaq Eskimo, an A.A.S. degree or certificate in Native language education and special classes in language literacy. A Career Ladder program trains current and future bilingual educators to teach Native languages in the public schools. For more information, visit www.uaf.edu/anlc/ or call 907-474-7874.

ALASKA QUATERNARY CENTER

The Alaska Quaternary Center, established in 1982, is a focal point for interdisciplinary Quaternary studies and research at UAF. The Quaternary period spans the past two million years, a time of glacial-interglacial climate oscillations, floral and fauna migrations, mammalian extinctions and human evolution. Quaternary studies thus encompass scientific investigations of geologic, climatic, biologic and human systems of the past and present. The AQC comprises researchers in the anthropology, biology and wildlife, and geology and geophysics departments, the School of Natural Resources and Agricultural Sciences, the Institute of Marine Science, the Institute of Arctic Biology and the Geophysical Institute.

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The AQC is housed within the Department of Geology and Geophysics and the College of Natural Science and Mathematics. The center sponsors seminars and workshops and hosts visiting speakers from countries throughout the world. Quaternary scholars from UAF regularly collaborate with Canadian, Russian and European colleagues conducting research in Alaska, Siberia and the Yukon, as well as Africa, Mongolia and western Europe. The AQC plays an important role in northern science during this time of increasing interest in studies of global change, biodiversity and other aspects of arctic climates and ecosystems. For more information, call 907-474-5033 or visit www.uaf.edu/aqc/.

ALASKA SEA GRANT COLLEGE PROGRAM

The Alaska Sea Grant College Program is a partnership between the University of Alaska and the National Sea Grant College Program, administered by the National Oceanic and Atmospheric Administration. ASG is housed in the UAF School of Fisheries and Ocean Sciences, with headquarters in Fairbanks. ASG develops and supports research, education, and extension programs and partnerships to help sustain Alaska's society and economy, and conserve Alaska's marine, estuarine and coastal watershed resources.

The Alaska Sea Grant Marine Advisory Program, headquartered in Anchorage, supports a team of field agents who are SFOS faculty members in 10 coastal communities. MAP agents provide a direct link between UAF and coastal residents, helping people learn about, wisely use, and conserve Alaska's marine and coastal resources. Communication specialists, located at ASG headquarters in Fairbanks, annually produce and distribute thousands of educational products about Alaska's seas and coasts, aimed at everyone from children to scientists and policy makers. ASG also recruits students to compete for lucrative, career-building national fellowships. For more information, visit www.alaskaseagrant.org or call 907-474-7086.

INSTITUTE OF ARCTIC BIOLOGY

The Institute of Arctic Biology is Alaska's principal research and educational unit for investigating high-latitude biological systems and providing policy makers necessary knowledge to interpret, predict and manage biological systems through integration of research, student education and service to Alaska and the nation.

Scientific research by IAB faculty, postdoctoral fellows and graduate students focuses on wildlife, including caribou, moose, waterfowl, game birds and polar bears; conservation biology addressing shorebirds; ecology, biogeochemistry, ecosystems and modeling of boreal, stream and arctic landscapes; climate change; physiology including hibernation and thermogenesis; evolutionary biology; human, plant and animal genetics; toxicology and infectious diseases; plant-animal interactions; biomedicine and human health disparities in a community-based and participatory paradigm, nutrition and physical activity.

IAB, established by the Alaska Legislature and the UA Board of Regents in 1962, is a world leader in arctic research and is an academic gateway to study of the circumpolar Arctic. IAB administers several specialized research programs and facilities. The Toolik Field Station is an internationally recognized arctic research station hosting hundreds of scientists from around the world each year. The Resilience and Adaptation Program prepares graduate students, scholars, policy-makers and managers to address issues of regional sustainability. The Center for Alaska Native Health Research investigates weight, nutrition and health in Alaska Natives. The Alaska Cooperative Fish and Wildlife Research Unit promotes research and graduate student training in the ecology and management of fish and wildlife. The Bonanza Creek Long-Term Ecological Research program focuses on the long-term consequences of climate change and disturbance in Alaska boreal forests. The Alaska Geobotany Center is dedicated to understanding northern ecosystems through the use of GIS, remote sensing and field experiments.

The Large Animal Research Station maintains colonies of muskoxen, caribou and reindeer for research and public education. The Alaska Basic Neuroscience Program studies mechanisms of neuroprotective adaptations. The Spatial Ecology Lab provides state-of-the-art spatial analysis of ecological data and development, testing and application of spatially explicit ecological models. IAB's research greenhouse provides a year-round environment for research and education. The Core DNA Lab keeps UAF at the cutting edge of molecular analysis. IAB animal quarters provide holding and experiment facilities for small animals. For more information, call 907-474-7412 or visit www.iab.uaf.edu.

ARCTIC REGION SUPERCOMPUTING CENTER

The Arctic Region Supercomputing Center is the university's large-scale, high-performance computing and massive data storage facility, providing the advanced tools scientists and engineers require for problem-solving on a huge scale and in a timely manner. The center's petabyte-scale storage facilities and supercomputers are capable of solving trillions of calculations per second and are open to use by any UAF affiliate.

Cyberinfrastructure provided by ARSC supports computational research in science and engineering with an emphasis on high latitudes and the Arctic. ARSC is an active collaborator with users and parallel computing experts worldwide to provide early adoption and assessment of next generation technologies. ARSC actively partners with UAF research institutes for grant-seeking and publication, mentoring graduate and undergraduate students and providing internships. Scientific specialists and technical staff at ARSC provide in-depth assistance and training for new and existing HPC users, tailored consulting and support for successful use of ARSC resources to address problems requiring solutions beyond the capabilities of conventional computers.

ARSC supports university courses in computer art, computational science and other disciplines with hardware, software and ARSC-affiliated faculty. For information, call 907-450-8600 or visit www.arsc.edu.

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CENTER FOR CROSS-CULTURAL STUDIES

Established in 1971, the Center for Cross-Cultural Studies is a teaching, research and development unit administered through the UAF College of Liberal Arts. It promotes programs that concentrate on the needs of Alaska's indigenous societies, with particular regard to education and rural issues.

The center offers academic degree programs and course work in cross-cultural studies. It designs and conducts basic and applied research projects, develops and evaluates alternative educational strategies for Alaska schools and disseminates findings on current research in education and rural community development.

The center gives technical support and information to school districts, social service agencies, Native corporations, tribal governments, community colleges and state and federal agencies in rural Alaska. It provides direction for improving educational, professional and community development opportunities for rural Alaskans, and it is a forum for examining those issues. Curricula incorporating indigenous knowledge and Native ways of knowing are available through the Alaska Native Knowledge Network on the web at www.ankn.uaf.edu. For information, telephone 907-474-1902 or email rjbarnhardt@alaska.edu.

SCHOOL OF FISHERIES AND OCEAN SCIENCES JUNEAU CENTER

The Juneau Center is home to eight UAF fisheries faculty members and about 40 graduate students enrolled in the M.S. and Ph.D. fisheries programs. It is located on the University of Alaska Southeast campus on the shore of Juneau's Auke Bay; several UAS faculty have joint appointments in SFOS and supervise UAF graduate students.

Faculty supervise students' research on a broad array of biological problems in laboratories that specialize in quantitative stock assessment, biology and ecology of marine and freshwater species, molecular genetics, behavioral ecology and other fields of study. Laboratories at the Juneau Center include specialized facilities for seawater culture of marine animals and plants, quantitative (computer) analysis and fisheries stock assessment, geographic information systems, molecular genetics, salmon culture and marine ecology. Juneau Center students also work in laboratories and facilities of other agencies in Juneau such as NOAA Fisheries' Auke Bay Laboratory, U.S. Geological Survey's Glacier Bay Field Station, and the Alaska Department of Fish and Game's Mark, Tag and Age Lab. For more information, visit www.sfos.uaf.edu/fishdiv/ or call 907-796-6441.

FISHERY INDUSTRIAL TECHNOLOGY CENTER

The Fishery Industrial Technology Center, located in Kodiak, contributes scientific and technical expertise to the Alaska seafood industry. As part of the School of Fisheries and Ocean Sciences, FITC is dedicated to fostering the prudent use of marine resources. Its activities focus on education through courses offered at the graduate level, service to the Alaska seafood industry, and research pertinent to seafood harvesting and processing. The sustainable harvesting program is research based on issues such as Steller sea lions and essential fish habitat. The seafood processing program focuses on greater use of Alaska's seafood harvest and issues of food safety and quality. FITC's faculty have expertise in the areas of fisheries, oceanography, physiology and nutrition, food chemistry, food microbiology, seafood processing, seafood resource economics and seafood engineering. The School of Fisheries and Ocean Sciences offers graduate courses in seafood science and nutrition as well as interdisciplinary graduate degrees for students within the university system. For more information, call 907-486-1500 or visit www.sfos.uaf.edu/fitc/.

GEOPHYSICAL INSTITUTE

Founded in 1948, the Geophysical Institute is a world-renowned center for the study of geophysics from the Sun to the center of the Earth.

Proximity to the Arctic provides excellent opportunities for high-latitude geosciences. Major research programs exist in space physics, atmospheric science, seismology, volcanology, satellite remote sensing, tectonics and sedimentation. The institute operates a rocket range for space research and a satellite ground station with processing and archiving for earth science support. In addition, the Alaska Volcano Observatory, the Alaska Earthquake Information Center and the Alaska Climate Research Center are located at the institute. More than 75,000 books, 350 journals and other specialized media are maintained at the Keith B. Mather Library which is shared with the International Arctic Research Center.

GI faculty and students benefit from the coupled activities of education and research. Undergraduate and graduate students find work in research programs while gaining academic credit toward their degrees. Most GI faculty have joint appointments providing teaching opportunities at the College of Natural Science and Mathematics or the College of Engineering and Mines.

The institute focuses on the needs of the state using geophysical data as the basis for decision-making tools. Examples include monitoring of earthquakes and volcanic eruptions leading to hazard alerts to federal and state agencies. Remote sensing specialists use satellite and airborne observations to help fight forest fires and monitor the health of Alaska's ecosystems. Together with the Arctic Region Supercomputing Center, institute scientists run computer simulations of tsunamis, aiding coastal communities in developing emergency evacuation plans. The institute has programs reaching out to K-12 schools with scientific curricula to educate and motivate potential science students.

More then 500 permanent field sites are operated throughout Alaska which are associated with the Poker Flat Research Range, the Alaska Earthquake Information Center, the Alaska Volcano Observatory and the Permafrost Research Laboratory.

For more information, visit www.gi.alaska.edu or call 907-474-7282.

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CENTER FOR GLOBAL CHANGE AND ARCTIC SYSTEM RESEARCH

The Center for Global Change and Arctic System Research facilitates collaborative research by faculty and students in environmental science and earth system studies. The center sponsors an annual student research grant competition that provides support to students for research related to global change with an arctic or subarctic focus presented in an interdisciplinary context. The center also participates in education and outreach activities on global change and arctic system research.

For information on education opportunities in earth system and environmental sciences, see Interdisciplinary Studies in the Degrees and Programs section of this catalog, or call 907-474-5415. For more information about the center and its activities, visit www.cgc.uaf.edu or call 907-474-5818.

INTERNATIONAL ARCTIC RESEARCH CENTER

The International Arctic Research Center was established in 1999 as a cooperative research institute supported by both the U.S. and Japanese governments. Funding comes from the National Science Foundation, the Department of Energy, and the National Oceanic and Atmospheric Administration in the U.S. and from the Japan Agency for Marine-Earth Science and Technology, and Japan Aerospace Exploration Agency.

IARC serves as a focal point of excellence for international collaboration and provides the arctic research community with an unprecedented opportunity to share knowledge about science in the Arctic, with an emphasis on global climate change research. IARC's mission is to foster arctic research in an international setting to help the nation and the international community to understand, prepare for, and adapt to the pan-Arctic impacts of climate change. In order to fulfill that mission, IARC provides an integrated science and service program for the benefit of the arctic community.

Key elements of that program include analysis, synthesis and provision of Arctic climate information, including Arctic Ocean hydrographic information for scientists, students, decision-makers, and the public; support and coordination of Arctic system modeling; and serving as a "gateway" or arctic climate science coordination center for Alaska and the arctic research community with special attention to collaboration with international scientists and institutions.

IARC conducts an internationally popular summer school for young researchers and holds workshops on the integration and synthesis of research. IARC also supports several K – 12 outreach projects.

IARC is located in the Syun-Ichi Akasofu Building adjacent to the Elvey Building on the Fairbanks campus. For more information, call 907-474-7176 or visit www.iarc.uaf.edu.

INSTITUTE OF MARINE SCIENCE

The Institute of Marine Science conducts marine science studies in the world's oceans, with special emphasis on arctic and Pacific subarctic waters.

The faculty provide expertise in marine biology, biological oceanography, physical, chemical and geological oceanography. Instruction is carried out through the graduate program in marine sciences and limnology in the School of Fisheries and Ocean Sciences, where degrees are offered at the master's and doctoral levels in various fields of marine science.

Research efforts cover a wide range of disciplines, and some projects are components of large national and international cooperative programs. Institute of Marine Science researchers also participate actively in the broad marine science community, serving on a variety of national and international steering committees, boards, panels and advisory committees.

Research facilities include modern laboratories on the Fairbanks campus; the Seward Marine Center, a major coastal facility in Seward; and the Kasitsna Bay Laboratory, a marine biology field station on Kachemak Bay. The Seward Marine Center supports a high-quality seawater system and excellent biological and chemical laboratories. The Alaska SeaLife Center, a private state-of-the-art mammal and bird research and exhibition facility adjacent to the Seward Marine Center, also offers outstanding research facilities.

Institute of Marine Science research programs include the Virtual Tsunami Center; Alaska Natural Geography in Shore Areas, Census of Marine Life; Alaska Ocean Observing System; GAK1, Gulf of Alaska CTD Time Series; GLOBEC, Global Ocean Ecosystem Dynamics; and NEWNET/ORION, a radiation and climatological monitoring program through autonomous stations at Fairbanks, Seward, Nome, Kotzebue, Point Hope and Barrow. Laboratories and specialists cover areas including acoustics; algae, biological, chemical, fisheries, and geological oceanography; marine biology; mammals; pathology and ecosystems; remote sensing; seagrass studies; and underwater instrumentation.

The main offices, laboratories and computer facilities of IMS are located in the William A. O'Neill, Laurence Irving and Arctic Health Research buildings on the west ridge of the University of Alaska Fairbanks campus. For more information, visit www.ims.uaf.edu or call 907-474-7229.

INSTITUTE OF NORTHERN ENGINEERING

The Institute of Northern Engineering serves as the research branch of the College of Engineering and Mines. INE faculty engineer solutions for the world's cold regions and beyond. The institute supports faculty and students studying such unique areas as arctic hydrology, renewable energy, ground water contamination, environmental remote sensing, robotics, ecological engineering, cold regions infrastructure, materials technology and mining.

The institute includes the Alaska Center for Energy and Power, Mineral Industry Research Laboratory, Petroleum Development Laboratory, Transportation Research Center, and the Water and Environmental Research Center, home of the Alaska Stable Isotope Facility. INE also participates in many cross-institute endeavors, such as the Alaska Center for Climate Assessment and Policy.

External grant and research support for INE programs approaches $14 million annually. Most of INE's approximately 65 researchers are full-time faculty in the College of

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Engineering and Mines, allowing research results to reach the classroom quickly. INE has formed a diverse interdisciplinary team in cooperation with other research groups to tackle many varied problems. This environment provides graduate and undergraduate students with extensive hands-on experience, making them particularly valuable as future employees. INE is a student-centered research unit. For more information, visit www.uaf.edu/ine/ or call 907-474-5457.

UNIVERSITY OF ALASKA MUSEUM OF THE NORTH

Voted the "Best Museum in Alaska," the University of Alaska Museum of the North is a vital component of UAF's research and education facilities as well as a thriving visitor attraction.

The museum's research collections hold more than 1.4 million artifacts and specimens representing millions of years of biodiversity and more than 11,000 years of cultural traditions in the North. These collections form the foundation for the museum's exhibits and education programs and serve as a critical source of data for issues unique to the circumpolar North. Using the collections, university students work with the museum's faculty curators on original research aimed at interpreting the region's dynamic environment and cultures.

The museum's Rose Berry Alaska Art Gallery features 2,000 years of Alaskan art — from ancient ivory carvings to contemporary sculptures. In the Gallery of Alaska, exhibit highlights include the state's largest gold display, extensive displays of Alaska Native art and artifacts, and Blue Babe, a 36,000-year-old mummified steppe bison. The museum also hosts several special exhibits each year. In addition, the museum presents artists' residencies, lectures and family programs on a variety of Alaska topics throughout the year. Handheld audio guides supplement the exhibits.

In 2005, the museum opened its new wing. Nationally recognized architect Joan Soranno and the GDM/HGA architectural team designed the expanded museum to convey a sense of Alaska, with innovative lines and spaces evoking images of glaciers, alpine ridges, breakup on the Yukon River and the northern lights. The expansion, a $48 million project, doubled the size of the museum's facilities and included major renovations to the museum's original building.

For more information, visit www.uaf.edu/museum/ or call 907-474-7505.

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GETTING STARTED

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UAF's Marit Rjabov (#203) leads the pack through a heavy snowfall at the start of the women's race during the Alaska Nordic Cup ski competition at Birch Hill.

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Applying for Admission: Occupational Endorsement Programs

When to Apply

Applications for admission to occupational endorsement programs are due no later than June 15 for fall semester, Nov. 1 for spring semester or May 1 for summer semester.

High school seniors are encouraged to apply for admission as early as the first semester of their senior year and should provide an official high school transcript including a list of courses in progress.

How to Apply

Apply online at www.uaf.edu/admissions/. Application forms may also be printed from the above website or requested from the Office of Admissions and the Registrar. Before an application can be reviewed, the Office of Admissions and the Registrar must receive:

- **Application for Admission**
  Applications must be received before the published deadlines, along with a $40 nonrefundable processing fee. The fee should be paid by check, credit card or money order in U.S. funds to the University of Alaska Fairbanks. Please do not send cash.
- **Transcripts**
  Most applicants to occupational endorsement programs are not required to submit high school or college transcripts but all are strongly encouraged to do so. Transfer students who want to receive credit for prior work must submit official transcripts.

Admission Requirements

For admission to occupational endorsement programs, official documentation must be provided showing that the applicant:

A. is at least 18 years old, or

B. has a high school diploma*, or

C. has a General Educational Development (GED) diploma.

* *To earn a high school diploma in Alaska, a student must fulfill all curriculum requirements and satisfactorily complete all three competency areas of the High School Qualifying Exam.*

Program Completion

Students should check with an advisor for the specific requirements for their program.

Occupational endorsement programs are designed to give students occupational training in a specific field. These programs require between 9 and 29 credit hours and will be posted to the student's transcript upon completion and approval by the academic department. The credit hours may be applied to other undergraduate degree programs (when applicable).

Where to Get More Information

Office of Admissions and the Registrar
University of Alaska Fairbanks
First Floor, Signers' Hall
P.O. Box 757480
Fairbanks, AK 99775-7480
Email: admissions@uaf.edu
Online: www.uaf.edu/admissions/
Telephone: 907-474-7500
Toll-free: 800-478-1823
Fax: 907-474-7097

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Applying for Admission: Certificate or Associate Degree Programs

When to Apply

Freshman and transfer applications for admission to certificate or associate degree programs are due no later than June 15 for fall semester, Nov. 1 for spring semester or May 1 for summer semester.

High school seniors are encouraged to apply for admission as early as the first semester of their senior year and should provide an official high school transcript including a list of courses in progress. Transfer students should apply at least three to four months prior to the beginning of the semester in which they plan to enroll.

How to Apply

Apply online at www.uaf.edu/admissions/. Application forms may also be printed from the above website or requested from the Office of Admissions and the Registrar. Before an application can be reviewed, the Office of Admissions and the Registrar must receive:

- **Application for Admission**
  Applications must be received before the published deadlines, along with a $40 nonrefundable processing fee. The fee should be paid by check, credit card or money order in U.S. funds to the University of Alaska Fairbanks. Please do not send cash.
- **Transcripts**
  Most applicants to certificate and associate degree programs are not required to submit high school or college transcripts but all are strongly encouraged to do so. Transfer students who want to receive credit for prior work must submit official transcripts.
- **Test Results**
  Certificate and associate degree applicants with fewer than 30 semester credit hours must submit the results of the ACT Plus Writing (preferred), SAT or ACCUPLACER test. Test results for English and composition must be less than two years old; for math, less than one year old. These test scores are used to help place the student in English, mathematics and other freshman courses.

  Contact Testing Services at 907-474-5277 or your high school guidance office for information concerning the ACT Plus Writing, SAT or ACCUPLACER tests.
- **International Students**
  See page 31 for additional information.

Admission Requirements

For admission to associate/certificate programs, official documentation must be provided showing that the applicant:

A. is at least 18 years old, or

B. has a high school diploma*, or

C. has a General Educational Development (GED) diploma.

* *To earn a high school diploma in Alaska, a student must fulfill all curriculum requirements and satisfactorily complete all three competency areas of the High School Qualifying Exam.*

Students under the age of 18 who will not have a high school diploma or GED prior to the start of their first semester are not admissible but may take courses as a non-degree student. Upon turning 18 they may apply for admission to an associate or certificate level program.

TRANSFER STUDENTS

Transfer students are eligible for admission if they left their previous accredited institution(s) in good standing. Admission status will be determined on an individual basis if a student attended an unaccredited postsecondary institution. Students transferring with fewer than 30 semester hours of transferable credit must submit placement scores from the ACT Plus Writing (preferred), SAT or ACCUPLACER test. Test results must be less than two years old. See Transferring Credits on page 34 for more information.

HIGH SCHOOL STUDENTS

High school students may take classes at UAF. There are two enrollment options — Secondary Student Enrollment and TECH PREP; both have specific registration requirements but do not require admission to UAF.

HOME-SCHOOLED STUDENTS

Home-schooled students may be admitted to an associate or certificate program if the student is at least 18 years old, holds a GED, graduated from a state-sponsored correspondence program with a high school diploma or with the approval of the director of admissions.

After Acceptance

Qualified applicants will receive a letter of acceptance once all items are received and evaluated. This letter will list any conditions under which the student is being admitted.

Qualified applicants who are in their last year of high school or who are attending another college will receive conditional acceptance. Acceptance becomes final when

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the Office of Admissions and the Registrar receives official transcripts showing the student has satisfactorily completed all work in progress and that high school seniors have graduated. Acceptance to UAF is final only when the Office of Admissions and the Registrar has accepted all necessary credentials.

REQUEST TO POSTPONE

An offer of admission to UAF is valid for the semester for which the applicant applied. Requests to postpone admission until a later semester may be made in writing to the Office of Admissions and the Registrar. Admission may be postponed for up to one calendar year. Students are required to notify the Office of Admissions and the Registrar if they are attending another school outside the University of Alaska Statewide System.

READMISSION OF FORMER DEGREE-SEEKING STUDENTS

Undergraduate degree-seeking students who choose not to enroll for a semester or more may be eligible to re-enroll in their original degree program without reapplying for admission. Students remain eligible to register for classes if:

- they have not been academically disqualified,
- they have not attended a non-UA institution since they were last enrolled at UAF,
- their lapse in enrollment is less than five years, and
- they are continuing with the same degree program as before.

Students who meet all of the above requirements should consult with their academic advisor and register for classes. Students who do not meet all of these requirements should submit an undergraduate application for admission along with the $40 processing fee and transcripts of any non-UA course work taken. Students who are unsure about their status should contact the Office of Admissions and the Registrar.

- **Fresh Start for Returning Students**
  Fresh Start can offer a new beginning for students who performed poorly at UAF when enrolled at least two years ago. Students who withdrew from school or were dismissed for academic reasons may apply for readmission and request that their entire prior academic record be disregarded. Students who qualify for Fresh Start will begin their college study anew with no credits attempted or earned, and no quality points reflected in future GPA calculations. Fresh Start can be used only once.

  At least two years must have elapsed since the beginning of the last semester the applicant attended UAF. The applicant may be asked to present evidence that the conditions which resulted in poor academic performance have changed enough so there is a reasonable expectation that the student can perform satisfactorily if permitted to resume college study.

  All prior course work will remain part of the student's overall academic record and appear on transcripts, but none of the previously earned credits can be used in a new program. These credits will be included only in GPA computations for graduation with honors (see Graduation with Honors, page 94). A student admitted under Fresh Start may be allowed advanced standing or a waiver of requirements just as any other student, but will not be allowed credit by exam for courses lost in Fresh Start. Students who are interested in Fresh Start should contact the Office of Admissions and the Registrar.
- **Readmission of Servicemembers**
  The Higher Education Opportunity Act of 2008 requires that students who left school to serve in the uniformed services be readmitted into the same program with the same standing they had when they left. UAF allows for special readmission of these students. More information is available at www.uaf.edu/admissions/other/military/.

Where to Get More Information

Office of Admissions and the Registrar
University of Alaska Fairbanks
First Floor, Signers' Hall
P.O. Box 757480
Fairbanks, AK 99775-7480
Email: admissions@uaf.edu
Online: www.uaf.edu/admissions/
Telephone: 907-474-7500
Toll-free: 800-478-1823
Fax: 907-474-7097

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Applying for Admission: Bachelor's Degree Programs

When to Apply

Freshman and transfer applications for admission to a bachelor's degree program are due no later than June 15 for fall semester, Nov. 1 for spring semester or May 1 for summer semester.

Students applying to baccalaureate programs after the published deadlines will be considered for admission into pre-major (see page 26), bachelor's intended status. Applications are processed in the order they are received. Applications received after the published deadlines may not be processed by the beginning of the semester.

High school seniors are encouraged to apply for admission as early as the first semester of their senior year and should provide an official high school transcript including a list of courses in progress. Transfer students should apply at least three to four months before the beginning of the semester in which they plan to enroll.

How to Apply

Apply online at www.uaf.edu/admissions/. Application forms may also be printed from the above website or requested from the Office of Admissions and the Registrar. Before an application can be reviewed, the Office of Admissions and the Registrar must receive:

- **Application for Admission**
  Applications must be received before the published deadlines, along with a $50 nonrefundable processing fee. The fee should be paid by check, credit card or money order in U.S. funds to the University of Alaska Fairbanks. Please do not send cash.

  Students applying to baccalaureate programs after the published deadlines will be considered for admission into premajor, bachelor's intended status. Applications are processed in the order they are received. Applications received after the published deadlines may not be processed by the beginning of the semester.
- **Transcripts**

  High school transcripts — Applicants with no college course work or fewer than 30 transferable semester credit hours of college credit must also submit official high school transcripts.

  College transcripts — Applicants who have college-level coursework must send official college or university transcripts to UAF. To be considered official, transcripts must arrive in sealed envelopes from each institution attended.

  International — International applicants must present an evaluation of all required academic transcripts compiled by an independent academic credential evaluation provider. UAF requires that all applicants use one of the providers listed at www.uaf.edu/admissions/international/undergrad/ for this service. Please make note of the following:
  - Transcripts/credentials from Canadian institutions are exempt from this requirement; they may be sent directly to UAF from the issuing institution (this excludes institutions in the Province of Quebec).
  - One official copy of the transcript(s) should be sent from the applicant's international university to UAF. A second copy should be sent to the credentialing agency directly.
  - Request the comprehensive course-by-course credential report.
  - Undergraduate students seeking to transfer credits to UAF must send course descriptions or course catalogs (in English) directly to the UAF Office of Admissions and the Registrar.
- **Test Results**
  Freshman and transfer applicants with fewer than 30 semester credit hours must submit the results of either the ACT Plus Writing (preferred) or the SAT examination. Test results for English and composition must be less than two years old; for math, less than one year old. These test scores are used to help place the student in English, mathematics and other first year courses.

  Contact Testing Services at 907-474-5277 or your high school guidance office for information concerning the ACT Plus Writing or SAT. Please note, the ACCUPLACER, ASSET, COMPASS or other placement tests do not satisfy this requirement.
- **International Students**
  See page 31 for additional information.

Admission Requirements

For admission to baccalaureate level programs, applicants must fulfill either:

Option 1:

a. have a high school diploma*, and

b. pass the 16-credit high school core curriculum (see Table 1) with a GPA of at least 2.5, and

c. have a cumulative GPA of 3.0. No minimum ACT or SAT score is required, **OR**

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TABLE 1 **HIGH SCHOOL ENTRANCE REQUIREMENTS FOR ALL BACHELOR'S DEGREE PROGRAMS***

English	Math	Social Sciences	Natural/Physical Sciences	Foreign Language
High School Core Curriculum—Required for all freshmen; 2.50 GPA in core; 16 credits total, which must include:				
4 cr	3 – 4 cr in college preparatory mathematics (selected from Algebra I, II, geometry, trigonometry, elementary functions, precalculus or calculus)	3 – 4 cr	3 – 4 cr (includes 1 cr lab science course in biology, chemistry or physics)	2 cr
College of Engineering and Mines • College of Natural Science and Mathematics • School of Fisheries and Ocean Sciences • School of Natural Resources and Agricultural Sciences				
4 cr	Algebra-2 cr; Geometry-1 cr; Trigonometry-½ cr; At least an additional ½ cr of advanced math is recommended for computer science, mathematics, physics, statistics and engineering.	3 – 4 cr	Physics or Chemistry-1 cr; Natural Sciences-1 cr; Elective-1cr. Both physics and chemistry are strongly recommended for engineering.	Same as high school core
College of Liberal Arts • School of Management • College of Rural and Community Development • General Studies (undecided or exploratory)				
4 cr	Same as high school core; School of Management students should be well prepared in mathematics with at least Algebra II, but precalculus or higher preferred.	3 – 4 cr	Same as high school core	Same as high school core

* *To earn a high school diploma in Alaska, you must fulfill all curriculum requirements and satisfactorily complete all three competency areas of the High School Qualifying Exam.*

Option 2:

a. have a high school diploma*, and
b. pass the 16-credit high school core curriculum (see Table 1) with a GPA of at least 2.5, and
c. have a cumulative GPA of 2.5, and submit results of the ACT Plus Writing (preferred) with a score of 18 or SAT with a score of 1290.

Admission to a specific baccalaureate degree program is based on a combination of your high school GPA and completion of specific high school courses. See Table 1 above for entrance requirements to specific colleges and schools within the university.

Test results from the ACT Plus Writing (preferred) or SAT must be received before a student can be fully admitted. Test results for English and composition must be less than two years old; for math, less than one year old. This requirement will be waived for students who have successfully completed, with a grade of C or better, the equivalent of 3 credits of 100-level math and 100-level English composition from a regionally accredited institution of higher education within the last two years.

* *To earn a high school diploma in Alaska, you must fulfill all curriculum requirements and satisfactorily complete all three competency areas of the High School Qualifying Exam.*

PRE-MAJOR

Students who have not met the minimum requirements for admission to a baccalaureate degree program will be admitted to pre-major status within the department of their choice.

Students will be changed to major status when they are in good standing and have completed 14 credits at the 100-level or above with a C (2.0) average or higher, 9 credits of which must satisfy baccalaureate core requirements.

GENERAL STUDIES

Students accepted to baccalaureate-level programs who do not select a major will be admitted as general studies students. This program is administered by the vice provost. General studies students with 75 or more earned credits are required to declare a major prior to registration. Students receiving GI assistance or veterans' benefits may be required to change to a declared major to keep their benefits award. Students must have declared a major in order to participate in the Western Undergraduate Exchange program.

TRANSFER STUDENTS

A transfer student is defined as someone coming into the university with at least 30 transferable semester credits. Transfer students are eligible for admission to a baccalaureate program if they have a 2.0 GPA in their previous course work and left their previous institution(s) in good standing. If applying to a technical or scientific program, students may need to present a higher grade average and proof that they have completed appropriate background courses before they will be admitted. Students transferring into a baccalaureate degree program with fewer than 30 semester hours of transferable credit must also meet the freshman admission requirements listed on page 25. Admission status for students who have attended an unaccredited postsecondary institution will be determined on an individual basis. See Transferring Credits on page 34 for more information.

PROBATIONAL ACCEPTANCE

Applicants with previous college course work may be admitted with probationary status if their cumulative or most recent term grade point average is less than C (2.0).

HIGH SCHOOL STUDENTS

High school students may take classes at UAF. One program, Alaska Higher Education Admission Decision (AHEAD), requires formal admittance to UAF. The other two enrollment options, Secondary Student Enrollment and TECH PREP, have specific registration requirements but do not call for admission to UAF. See the registration section for description of non-admission opportunities.

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- **AHEAD Program**
  The Alaska Higher Education Admission Decision program allows qualified high school students to be formally admitted to UAF as general studies students. AHEAD students are assigned an academic advisor and follow the registration timeline for degree-seeking students. To qualify, students must have completed three-fourths of their high school core curriculum and have a cumulative 3.0 GPA or higher. Students who wish to apply to the AHEAD program may pick up a program application and a UAF undergraduate application for admission from their high school counseling office, or from the UAF Office of Admissions and the Registrar.

HOME-SCHOOLED STUDENTS

Home-schooled students who have gone through a state-recognized program and have a valid high school diploma may be admitted to a baccalaureate program according to UAF admission standards. See page 25 for more information.

For home-schooled students who have not gone through a state-recognized program, admission to a baccalaureate degree is through an individual review by the director of admissions (or a designee). Applicants are required to submit scores from either the SAT or ACT Plus Writing prior to an admission review. Additional supporting documentation, such as letters of recommendation, may be requested for review by the director of admissions. In some cases, files will be shared with department chairs or faculty for further review.

Students who have not met the minimum requirements for admission to a baccalaureate degree program will be admitted to pre-major status within the department of their choice.

Students will be changed to major status when their admissions file is complete, they are in good standing, and they have completed 14 credits at the 100-level or above with a C (2.0) average or higher, 9 credits of which must satisfy baccalaureate core requirements.

It is especially critical that home-schooled applicants request admission to a baccalaureate program if they anticipate receiving scholarships that require enrollment in a four-year degree program.

After Acceptance

CONDITIONAL AND FINAL ACCEPTANCE

Qualified applicants will receive a letter of acceptance once all items are received and evaluated. This letter will list any conditions under which the student is being admitted.

Qualified applicants who are in their last year of high school or who are attending another college will receive conditional acceptance. Acceptance becomes final when the Office of Admissions and the Registrar receives official transcripts showing the student has satisfactorily completed all work in progress and that high school seniors have graduated. Acceptance to UAF is final only when the Office of Admissions and the Registrar has accepted all necessary credentials.

REQUEST TO POSTPONE

An offer of admission to UAF is valid for the semester for which the applicant applied. Requests to postpone admission until a later semester may be made in writing to the Office of Admissions and the Registrar. Admission may be postponed for up to one calendar year. Students are required to notify the Office of Admissions and the Registrar if they are attending another school outside the University of Alaska Statewide System.

APPLYING FOR A SECOND BACHELOR'S DEGREE

A student who has already earned a bachelor's degree at another institution and wants to complete a second bachelor's degree must apply for admission as an undergraduate transfer student. Upon official acceptance to a UAF undergraduate degree program, a student who earned a bachelor's degree from a regionally accredited institution will be considered to have completed the equivalent of the UAF baccalaureate core.

READMISSION OF FORMER DEGREE-SEEKING STUDENTS

Undergraduate degree-seeking students who choose not to enroll for a semester or more may be eligible to re-enroll in their original degree program without reapplying for admission. Students remain eligible to register for classes if:

- they have not been academically disqualified,
- they have not attended a non-UA institution since they were last enrolled at UAF,
- their lapse in enrollment is less than five years, and
- they are continuing with the same degree program as before.

Students who meet all of the above requirements should consult with their academic advisor and register for classes. Students who do not meet all of these requirements should submit an undergraduate application for admission along with the $50 processing fee and transcripts of any non-UA course work taken. Students who are unsure about their status should contact the Office of Admissions and the Registrar.

- **Fresh Start for Returning Students**
  Fresh Start can offer a new beginning for students who performed poorly at UAF when enrolled at least two years ago. Those who withdrew from school or were dismissed for academic reasons may apply for readmission and request that their entire prior academic record be disregarded. Students who qualify for Fresh Start begin their college study anew with no credits attempted or earned, and no quality points reflected in future GPA calculations. Fresh Start can be used only once.

  At least two years must have elapsed since the beginning of the last semester the applicant attended UAF. The applicant may be asked to present evidence that the conditions which resulted in poor academic performance have changed enough so there is a reasonable

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expectation that the student can perform satisfactorily if permitted to resume college study.

All prior course work will remain part of the student's overall academic record and appear on transcripts, but none of the previously earned credits can be used in a new program. These credits will be included only in GPA computations for graduation with honors (see Graduation with Honors, page 133). A student admitted under Fresh Start may be allowed advanced standing or a waiver of requirements just as any other student, but will not be allowed credit by exam for courses lost in Fresh Start.

- **Readmission of Servicemembers**
  The Higher Education Opportunity Act of 2008 requires that students who left school to serve in the uniformed services be readmitted into the same program with the same standing they had when they left. UAF allows for special readmission of these students. More information is available at www.uaf.edu/admissions/other/military/.

Where to Get More Information

Office of Admissions and the Registrar
University of Alaska Fairbanks
First Floor, Signers' Hall
P.O. Box 757480
Fairbanks, AK 99775-7480
Email: admissions@uaf.edu
Online: www.uaf.edu/admissions/
Telephone: 907-474-7500
Toll-free: 800-478-1823
Fax: 907-474-7097

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Applying for Admission: Graduate Degree Programs

When to Apply

Applicants should apply to a graduate degree program six to nine months before the beginning of the semester in which they plan to enroll. At the latest, applications for graduate admission with all supporting documentation, transcripts and test scores must be received by June 1 for the fall semester and Oct. 15 for the spring semester. Earlier deadlines apply for international applicants.

Most departments require much earlier submission of credentials for graduate study. Contact the prospective department for specific deadlines; the number of students accepted is limited.

Graduate students are strongly encouraged to apply early. Applications received near deadline will be processed as time permits or may be considered for the following semester.

How to Apply

Apply online at www.uaf.edu/admissions/. Application forms may also be printed from the above website or requested from the Office of Admissions and the Registrar. Before an application can be reviewed, the Office of Admissions and the Registrar must receive:

- **Graduate Application for Admission**
  Applications must be received before the published deadlines, along with a $60 nonrefundable processing fee. The fee should be paid by check, credit card or money order in U.S. funds to the University of Alaska Fairbanks. Please do not send cash.
- **Transcripts**
  The Office of Admissions and the Registrar requires official transcripts of all college-level course work. To be considered official, transcripts must arrive in sealed envelopes from each institution attended.
- **Transcripts for International Applicants**
  International applicants must submit official transcripts showing that a bachelor's degree has been or will be earned, and must submit certified English translations of transcripts of all college-level course work to the Office of Admissions and the Registrar.
- **Test Results**
  Results of the Graduate Record Exam (GRE) are required from applicants to most graduate programs. Some programs also require GRE subject exams. MBA program applicants are required to submit scores from the Graduate Management Admission Test (GMAT). Refer to the admission requirements of your prospective degree program to determine which tests are required. Results of the GRE are required for all students whose cumulative undergraduate GPA is below a B (3.0) average regardless of the departmental requirement.
- **Resume/Vitae**
  Include work and research experience, publications, patents, honors, professional and civic memberships, and foreign travel.
- **Statement of Academic Goals**
  Write a statement indicating why study is desired in a particular program. Include qualifications and educational experience. (For applicants to education programs, a four-to-five-page self-evaluation essay is required.)
- **Letters of Recommendation**
  Send at least three letters of recommendation from people able to vouch for the applicant's academic work, character and ability to undertake graduate study and research.
- **Master of Fine Arts Applicants**
  Master of fine arts applicants must submit writing samples when applying for admission to the creative writing program. An art portfolio (usually slides) must be submitted when applying to the program in art.
- **Interdisciplinary Applicants**
  Submit a Graduate Study Plan (available for download at www.uaf.edu/inds/) and a short research proposal. Applicants must also obtain commitment from a UAF faculty member to serve as advisory committee chair. Contact the Graduate School for specific interdisciplinary procedures.
- **International Students**
  See page 31 for additional information.
- **Students in Western Regional Graduate Programs**
  Students from Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington and Wyoming may be eligible for resident tuition through the Western Regional Graduate Program/Western Interstate Commission for Higher Education (WRGP/WICHE). This program is for students pursuing a graduate degree in clinical-community psychology, justice, northern studies or rural development. For more information about this program, contact the Graduate School at 907-474-7464, gradschool@uaf.edu, or online at www.uaf.edu/gradsch/. Students with questions may

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also contact the WICHE Student Exchange Program at P.O. Box 9752, Boulder, CO 80301-9752, 303-541-0210, or online at http://wrgp.wiche.edu.

Admission Requirements

In general, applicants may be admitted to a graduate program if they have a bachelor's degree from an accredited institution with at least a 3.0 (B) cumulative undergraduate GPA and a 3.0 (B) GPA in your major. Equivalent accomplishments at a foreign university may be substituted. The undergraduate major should provide suitable preparation for continuation of studies in the field of choice. Some programs require the Graduate Record Exam (GRE) or Graduate Management Admission Test (GMAT) and other special criteria for admission.

For the purposes of admission to graduate study, all grades, including those generated from retaking a course, are included in calculating GPA.

Program heads and/or committees in fields of interest will determine the adequacy of the student's preparation and whether or not departmental facilities are sufficient for their aims.

Information on specific degree programs is available from academic departments or by contacting the Graduate School at 907-474-7464, gradschool@uaf.edu, or online at www.uaf.edu/gradsch/.

After Acceptance

Qualified applicants can be accepted for admission while enrolled in their last semester at another college. Acceptance is conditional, however, pending receipt of the final transcript indicating satisfactory completion of work in progress and the completion of graduation requirements prior to enrollment at UAF.

Final acceptance to UAF is complete only when the Office of Admissions and the Registrar receives and accepts all credentials.

REQUEST TO POSTPONE

An offer of admission to UAF is valid for the semester for which the applicant applied. Requests to postpone admission until a later semester may be made in writing to the Office of Admissions and the Registrar. Admission may be postponed for up to one calendar year with the approval of the academic department and the dean of the graduate school. Students are required to notify the Office of Admissions and the Registrar if they are attending another school outside the University of Alaska Statewide System.

All graduate student requests to postpone are subject to approval by the department to which the student is applying.

Where to Get More Information

Office of Admissions and the Registrar
University of Alaska Fairbanks
First Floor, Signers' Hall
P.O. Box 757480
Fairbanks, AK 99775-7480
Email: admissions@uaf.edu
Online: www.uaf.edu/admissions/
Telephone: 907-474-7500
Toll-free: 800-478-1823
Fax: 907-474-7097

Graduate School
University of Alaska Fairbanks
202 Eielson Building
PO Box 757560
Fairbanks, AK 99775-7560
Email: gradschool@uaf.edu
Online: www.uaf.edu/gradsch/
Telephone: 907-474-7464

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Applying for Admission: International Students

When to Apply

Applications for admission from international students must reach the Office of Admissions and the Registrar before March 1 for the fall semester and Sept. 1 for the spring semester.

Processing applications for international students takes several months. International students must complete all UAF application requirements as well as meet requirements for U.S. immigration agencies.

Admission Requirements

Information regarding the process for application to baccalaureate or graduate programs can be found in the Getting Started section of this catalog beginning on page 25.

- **Transcripts**
  The Office of Admissions and the Registrar requires official transcripts of all high school and/or college-level course work signed and sealed by the registrar of the institution(s) attended. Transcripts must be issued in the original language and also must include certified English translations. Please see page 25 for undergraduate student transcript requirements and page 29 for graduate student transcript requirements.
- **Immigration requirements**
  Once a student has been accepted to UAF, the Office of International Programs and Initiatives will issue a Form I-20, which students must present at a U.S. embassy or consulate in their country of citizenship in order to obtain an F-1 (student) visa. The I-20 form requires the university to certify to U.S. immigration agencies that a student has been accepted for full-time enrollment and has sufficient funds to meet estimated expenses for an academic program.
  Anyone who is already in the United States on an F-1 visa must maintain a full-time course load and may not enroll as a part-time student (less than 12 credits per semester for undergraduate students, or less than 9 credits per semester for graduate students).
- **Financial Statements and Documentation**
  International students must sign a financial statement and provide documentation that they have funds available to pay all expenses at UAF, as well as round-trip transportation between their home and Alaska. Because the application for F-1 visas requires international students to affirm that they do not intend to live in the United States permanently, they are not eligible for resident tuition fees.

The minimum estimated cost for one school year at UAF for an international student is $27,965 for undergraduate students, and $28,195 for graduate students. This 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 winter clothing costs. Add approximately $4,500 for summer living expenses.

Residents of countries which hold approved sister city/sister province agreements qualify for resident tuition. A complete list of sister cities and provinces can be found at www.alaska.edu/bor/policy-regulations/ in Chapter 5.10, Tuition and Student Fees. For additional information see Estimated 2011 – 2012 UAF Annual Costs on page 7.

English Proficiency Requirements

Students on an F-1 visa are required to submit scores from the TOEFL (Test of English as a Foreign Language) or the IELTS (International English Language Testing System) exam unless English is the primary language of their country of origin (i.e., Great Britain, New Zealand, Australia or Canada [except Quebec]). English proficiency may be demonstrated by:

1. Passing the TOEFL with a minimum score of 79 (Internet-based exam), or 213 (computer-based exam), or 550 (paper-based exam) or
2. Passing the IELTS with a minimum score of 6.5.

A score from the TOEFL or IELTS is required and cannot be waived even though English may be the language of instruction in your educational system. Additionally, some graduate departments may require a higher TOEFL or IELTS score in order to qualify for admission.

Requests for exception to this policy must be submitted in writing to the Office of Admissions and the Registrar. At minimum, students must demonstrate:

1. Completion of four years of college preparatory English and graduation from high school or the equivalent in a country where English is the official language of instruction; or
2. Successful completion (C or higher) of college-level English; or
3. Other substantiation acceptable to the Office of Admissions and the Registrar. Other tests may be required to satisfy application requirements for specific undergraduate or graduate degree programs.

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Where to Get More Information

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University of Alaska Fairbanks
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Fairbanks, AK 99775-7480
Email: admissions@uaf.edu
Online undergraduate requirements: www.uaf.edu/admissions/international/undergrad/
Online graduate requirements: www.uaf.edu/admissions/international/grad/
Telephone: 907-474-7500
Toll-free: 800-478-1823
Fax: 907-474-7097

Office of International Programs and Initiatives
University of Alaska Fairbanks
P.O. Box 757760
215 Eielson Building
Fairbanks, AK 99775-7760
Email: fyisa@uaf.edu
Online: www.uaf.edu/oip/
Telephone: 907-474-5327
Fax: 907-474-5979

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Undergraduate Course Placement and Transfer Credits

Course Placement

MANDATORY PLACEMENT

Students who do not meet basic skills standards in reading, writing and mathematics must complete appropriate Developmental Education courses. Such students may not enroll in 100-level or above courses that depend on these skills until they have satisfactorily met the exit criteria of the appropriate Developmental Education course(s).

Students without appropriate standardized test scores (such as ACT Plus Writing, SAT, ASSET or ACCUPLACER), advanced placement credits, transfer credits or prerequisite coursework must have UAF-approved placement test scores prior to registering for classes their first semester at UAF. Placement exams must be taken within two calendar years prior to the start of the course, except for mathematics placement exams which must be taken within one calendar year. Students may not enroll in classes unless they meet the placement requirements. Placement into appropriate developmental or core classes must be done with the help of an academic advisor. Placement tests are available at every UAF community campus as well as Testing Services, the Academic Advising Center, Community and Technical College, Rural Student Services, Center for Distance Education and Northern Military Programs at Fort Wainwright, Eielson Air Force Base and Delta Career Advancement Center.

For placement into English F111X or any developmental English course, students must also have a scored writing sample such as an SAT or ACT writing sample, or a UAF-generated writing sample given along with ASSET, COMPASS, or ACCUPLACER or other placement tests.

TABLE 2 **MATH, STATISTICS AND DEVELOPMENTAL MATH PLACEMENT SCORES**

MATHEMATICS AND DEVELOPMENTAL MATHEMATICS	**ACT** MATH	**SAT** MATHEMATICS	**COMPASS** PRE-ALGEBRA ALGEBRA COLLEGE ALGEBRA TRIGONOMETRY	**ACCUPLACER** ARITHMETIC ELEMENTARY ALGEBRA COLLEGE MATH	**ASSET** FORM B2 NUMERICAL SKILLS ELEMENTARY ALGEBRA INTERMEDIATE ALGEBRA COLLEGE ALGEBRA
MATH F205*	26 – 36	590 – 800	N/A	N/A	N/A
MATH F200X (MATH F262X*/F272X*)	28 – 36	610 – 800	College Algebra: 56 – 100 and Trigonometry: 46 – 100	College Math: 90 – 120	N/A
STAT F200X*	26 – 36	590 – 800	College Algebra: 50 – 55 and Trigonometry: 0 – 45	College Math: 60 – 120	College Algebra: 41 – 55
MATH F108	23 – 27	530 – 600	College Algebra: 50 – 55 and Trigonometry: 0 – 45	College Math: 60 – 89	College Algebra: 41 – 55
MATH F107X (MATH F161X*)	23 – 27	530 – 600	College Algebra: 50 – 55 and Trigonometry: 0 – 45	College Math: 50 – 89	College Algebra: 41 – 55
MATH F103X*	20 – 22	470 – 520	Algebra: 50 – 100 and College Algebra: 0 – 55 and Trigonometry: 0 – 45 (if College Algebra score 50 – 55)	Elementary Algebra: 70 – 120	Elementary Algebra: 37 – 55 and Intermediate Algebra: 23 – 40
DEVM F105/F106 (DEVM F066*)	20 – 22	470 – 520	Algebra 50 – 75	Elementary Algebra: 70 – 120	Elementary Algebra: 37 – 55 and Intermediate Algebra: 23 – 40
DEVM F060/F062 (DEVM F056*/F066*/ F065*; HLTH F116*; PRT F155*; TTCH F131**)	17 – 19	410 – 460	Pre-Algebra: 50 – 100 and Algebra: 0 – 49	Elementary Algebra: 48 – 69	Numerical Skills: 37 – 55 and Elementary Algebra: 23 – 36
DEVM F050 (DEVM F056*/F065*, ABUS F155*; ECE F117*; HUMS F117*)	1 – 16	200 – 400	Pre-Algebra: 25 – 49	Arithmetic: 34 – 120 and Elementary Algebra: 0 – 47	Numerical Skills: 33 – 36
Adult Basic Education (ABE) (ALPA in Fairbanks)	N/A	N/A	Pre-Algebra: 0 – 24	Arithmetic: 0 – 33	Numerical Skills: 23 – 32

Note: In cases where a student has multiple placement test scores, placement recommendations will be made using the test scores which provide the highest placement. Academic advisors should check test score dates on BANNER or UAOnline and strongly recommend that students retest if test scores are more than one year old.

* *Students may take this course if allowed by the major or degree program.*

** *Students may take TTCH F131 if allowed by the major or degree program and if DEVM F105/F106 is not required by the major or degree program.*

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Students who enroll in a developmental or core course without meeting the requirements may be withdrawn from the course through the faculty-initiated withdrawal process. Prerequisite courses must be taken within two calendar years prior to the start of developmental and lower division core math courses. Students may not enroll in Perspectives on the Human Condition courses unless they meet the placement requirements for English F111X (including reading). Students may not enroll in core science classes unless they have placement at DEVM F105 or above and placement into English F111X.

ENGLISH AND MATHEMATICS

On the basis of test scores, students may be required to take developmental English, developmental studies (for reading) and/or developmental mathematics courses. These courses are designed to help students achieve competencies necessary to succeed in college-level courses. A student will be placed in English F111X if the student's ACT writing test score is 7 or above, the ACT English score is 18 or above and the ACT reading score is 22 or above (or your SAT writing score is 430 and SAT critical reading score is 510 or above, or the score on another university-approved placement test is equivalent). However, if the student's standardized test scores are below these minimums and if the high school cumulative GPA is 3.0 or higher, the student may enroll in English F111X with permission of the director of composition or community campus English/humanities faculty. Students enrolling in developmental English or English courses are required to complete a UAF-approved writing sample for placement as well as the ACT Plus Writing, SAT or ACCUPLACER.

Mathematics course placement will vary according to the type of degree the student is planning to pursue and the corresponding math course(s) needed (see the degree program requirements for more detail). ACT Plus Writing, SAT or ACCUPLACER test scores are used to determine math placement.

Minimum test scores for placement into math and developmental math courses are listed in Table 2 and for English writing and reading courses in Table 3 and Table 4.

It is best to consult with an academic advisor or faculty in the developmental education, English or math department(s) with questions regarding appropriate course placement.

FOREIGN LANGUAGE

Students may not register for foreign language classes higher than F101 unless they have received credit through CLEP, AP, transfer or another UAF-approved test for the prior levels. Students may enroll in the level of a language at which they are competent, based on prior experience.

COURSE PREREQUISITES

Course prerequisites indicate what previous preparation is needed to enroll in a course. An instructor has the right to drop any student from the course if he or she does not meet the prerequisite or has not received a grade of "C" (2.0) or better in all prerequisite courses.

Transferring Credits

Credit accepted at UAF that has been earned from other regionally accredited institutions, through military educational experiences or credit accepted by special approval is considered transfer credit. Where possible, transfer credit is

TABLE 3 **ACT/SAT ENGLISH, DEVELOPMENTAL ENGLISH AND READING COURSE PLACEMENT SCORES**

COURSES	ACT ENGLISH	ACT READING	ACT WRITING TEST*	SAT CRITICAL READING	SAT WRITING
ENGL F211X/F213X**	29 – 36	N/A	10 – 12	N/A	640 – 800
ENGL F111X***	18 – 28	22 – 36	7 – 9	510 – 800	430 – 630
ENGL F111X*** + DEVS F105	18 – 28	17 – 21	7 – 9	410 – 500	430 – 630
ENGL F111X*** + DEVS F052	18 – 28	1 – 16	7 – 9	200 – 400	430 – 630
DEVE F070***	11 – 17	22 – 36	4 – 6	510 – 800	250 – 420
DEVE F070*** + DEVS F105	11 – 17	17 – 21	4 – 6	410 – 500	250 – 420
DEVE F070*** + DEVS F052	11 – 17	1 – 16	4 – 6	200 – 400	250 – 420
DEVE F060	1 – 10	22 – 36	2 – 3	510 – 800	200 – 240
DEVE F060 + DEVS F105	1 – 10	17 – 21	2 – 3	410 – 500	200 – 240
DEVE F060 + DEVS F052	1 – 10	1 – 16	2 – 3	200 – 400	200 – 240
DEVS F105	N/A	17 – 21	N/A	410 – 500	N/A
DEVS F052	N/A	1 – 16	N/A	200 – 400	N/A
Adult Basic Education	N/A	N/A	N/A	N/A	N/A

Note: In cases where a student has multiple placement test scores, placement recommendations will be made using the test scores which provide the highest placement. Academic advisors should check test score dates on BANNER or UAOnline and strongly recommend that students retest if their scores are more than two years old.

* *The ACT English Test score determines placement for students who have different placement actions based on their ACT Writing test score.*

** *The English department is working with community campuses to develop a separate process for students with limited access to ACT/SAT tests who are highly skilled in writing to be placed into ENGL F211X/213X.*

*** *DEVE F109—Preparatory College Writing III or DEVS F104—University Communications is strongly recommended for students who earn a grade of C or lower in DEVE F070 or earn lower than a C in ENGL F111X on their first attempt.*

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equated with UAF courses. See Table 5 for a list of substitutions within the University of Alaska System and Table 6 for substitutions from non-UA institutions. UAF is a member of the Servicemembers Opportunity Colleges (SOC) network. For additional information about the SOC program, contact the Office of Admissions and the Registrar.

UAF's transfer credit resource website at http://uaonline.alaska.edu shows most courses previously evaluated by UAF and is an unofficial reference for undergraduate students who are considering transferring to UAF. An official evaluation of transfer credits will be provided after formal application and admission to a degree program at UAF.

The following regulations apply to transfer of credit:

1. Students are eligible for transfer of credit if they have been admitted to an undergraduate degree or certificate program.
2. The applicability of transfer credit to a student's major and/or minor requirements is subject to approval by the major and/or minor department. Transfer students must fulfill the UAF graduation and residency requirements, including those specific to their programs.
3. Undergraduate credits earned at the 100-level or above with a C- grade or higher at institutions accredited by one of the six regional accrediting agencies will be considered for transfer. Transfer credit is not granted for courses with doctrinal religious content or for graduate courses (for undergraduate programs).
4. Transfer credit is awarded for courses in which the student received grades of C- or better. Instructor permission may be required for purposes of registration if the transfer credit courses have not satisfied the prerequisite requirements, or if the transferable grade

TABLE 4 **ACCUPLACER/ASSET/COMPASS ENGLISH, DEVELOPMENTAL ENGLISH AND READING COURSE PLACEMENT SCORES**

COURSES	**ACCUPLACER** SENTENCE SKILLS	**ACCUPLACER** READING COMPREHENSION	**ACCUPLACER** WRITEPLACER PLUS*	**ASSET** FORM B2 WRITING SKILLS	**ASSET** FORM B2 READING SKILLS	**UAF WRITING SAMPLE*** FOR USE WITH ASSET	**COMPASS** WRITING SKILLS	**COMPASS** READING SKILLS	**COMPASS** E-WRITE (2 – 8)*	**COMPASS** E-WRITE (2 – 12)*
ENGL F211X/ F213X**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
ENGL F111X***	80 – 120	105 – 120	6 – 8	45 – 54	46 – 53	17 – 25	52 – 100	89 – 100	7 – 8	9 – 12
ENGL F111X*** + DEVS F105	80 – 120	70 – 104	6 – 8	45 – 54	38 – 45	17 – 25	52 – 100	69 – 88	7 – 8	9 – 12
ENGL F111X*** + DEVS F052	80 – 120	55 – 69	6 – 8	45 – 54	35 – 37	17 – 25	52 – 100	62 – 68	7 – 8	9 – 12
DEVE F070***	60 – 79	105 – 120	4 – 5	40 – 44	46 – 53	11 – 16	41 – 51	89 – 100	5 – 6	6 – 8
DEVE F070*** + DEVS F105	60 – 79	70 – 104	4 – 5	40 – 44	38 – 45	11 – 16	41 – 51	69 – 88	5 – 6	6 – 8
DEVE F070*** + DEVS F052	60 – 79	55 – 69	4 – 5	40 – 44	35 – 37	11 – 16	41 – 51	62 – 68	5 – 6	6 – 8
DEVE F060	40 – 59	105 – 120	2 – 3	35 – 39	46 – 53	5 – 10	32 – 40	89 – 100	3 – 4	3 – 5
DEVE F060 + DEVS F105	40 – 59	70 – 104	2 – 3	35 – 39	38 – 45	5 – 10	32 – 40	69 – 88	3 – 4	3 – 5
DEVE F060 + DEVS F052	40 – 59	55 – 69	2 – 3	35 – 39	35 – 37	5 – 10	32 – 40	62 – 68	3 – 4	3 – 5
DEVS F105	N/A	70 – 84	N/A	N/A	38 – 45	N/A	N/A	69 – 88	N/A	N/A
DEVS 058	N/A	55 – 69	N/A	N/A	35 – 37	N/A	N/A	62 – 68	N/A	N/A
Adult Basic Education	0 – 39	0 – 54	0 – 1	23 – 34	23 – 34	0 – 4	0 – 31	0 – 61	2	2

Note: In cases where a student has multiple placement test scores, placement recommendations will be made using the test scores which provide the highest placement. Academic advisors should check test score dates on BANNER or UAOnline and strongly recommend that students retest if their scores are more than two years old.

* *The ACCUPLACER Sentence Skills, COMPASS Writing Skills, or ASSET Writing Skills score determines placement for students who have different placement actions based on their writing sample (essay) score.*

** *The English department is working with community campuses to develop a separate process for students with limited access to ACT/SAT tests who are highly skilled in writing to be placed into ENGL F211X/213X.*

*** *DEVE F109—Preparatory College Writing III or DEVS F104—University Communications is strongly recommended for students who earn a grade of C or lower in DEVE F070 or earn lower than a C in ENGL F111X on their first attempt.*

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TABLE 5 **UA SYSTEM 2011 – 2012 TABLE OF SUBSTITUTIONS**

Use this course substitution table to determine how individual courses that meet UAA or UAS general education requirements may substitute for individual UAF baccalaureate core courses. This table applies only to courses taken within the University of Alaska system. Students transferring courses from outside the UA system should consult Table 6 – Table of Substitutions: Non-UA Institutions.

Baccalaureate Core Requirements (number of credits needed)	To meet these UAF core course requirements:	Use any of these UAA general education courses:	Use any of these UAS general education courses:
COMMUNICATION (9 CR)			
Written Communication (3 cr)	ENGL F111X	ENGL 111	ENGL 111
Written Communication (3 cr)	ENGL F211X or F213X	ENGL 211, 212, 213, 214, 311, 312 or 414	ENGL 211, 212
Oral Communication (3 cr)	COMM F131X or F141X	COMM 111, 235, 237 or 241	COMM 111, 235, 237, 241
PERSPECTIVES ON THE HUMAN CONDITION (18 CR)*			
History (3 cr) Political Economy (3 cr) Social Culture (3 cr)	HIST F100X ECON/PS F100X ANTH/SOC F100X	ANTH 101, 200, 202, 250; BA 151; CEL 292; ECON 123, 201, 202, 210; EDEC 105; ENVI 212; GEOG/INTL 101; HNRS 292; HS 220; HUMS/SWK 106; INTL 101; JPC 101; JUST 110, JUST/SOC 251, JUST 330; LSSS 111; PARL 101; PS 101, 102, 311, PS/SOC 351; PSY 111, 150; SOC 101, 110, 201, 202; SWK 243; WS200	ANTH 101, 202, 211 ECON 100, 201, 202 GEOG 101; GOVT 101, 102, 230, 251; HIST 105, 106, 131, 132; PSY 101, 250; SOC 101, 201
Literature (3 cr)	ENGL/FL F200X	ART 261, 262, 36OA, 360B; ENGL 121, 201, 202, 301, 302, 305, 306, 307, 310, 383, 445; HIST 101, 102, 121, 122, 131,132, 341; HNRS 192; HUM 211, 212; (Languages: AKNS 101A, 101B, 101C, 102A, 102B, 102C, 201; ASL 101, 102, 201, 202; CHIN 101, 102; FREN, GER, JPN, RUSS, SPAN 101, 102, 201, 202, 301, 302); LING 101; MUS 221, 222; PHIL 101, 201, 211, 212, 313, 314; PS 331, 332, 333; THR 311, 312, 411, 412	ENGL 215, 223, 224, 225, 226, 261; HIST 105, 106, 131, 132; HUM 120; JOUR 101; (Languages: AKL 105, 106, 107, 108; ASL, FREN, SPAN, RUSS 101, 102 or other approved world languages); PHIL 101, 201, 271
Aesthetics (3 cr)	ART/MUS/THR F200X, or HUM F201X, or ANS F202X	AKNS/MUS 215; ART 160, 261, 262, 360A, 360B; DNCE 170; MUS 121, 124, 221, 222; THR 111, 311, 312, 411, 412	ART 160, 261, 262; MUS 123; THR 111, 211, 212
Ethics (3 cr)	BA F323X, or COMM F300X, or JUST F300X, or NRM F303X, or PHIL F322X, or PS F300X	PHIL 301, 302, 303, 304, 405	PHIL 301
FOREIGN LANGUAGE OPTION			
*OR complete 12 cr from the Perspectives on the Human Condition options above, plus 2 semester-length courses in a single Alaska Native language or other non-English language or 3 semester-length (9 cr) in American Sign Language at the university level.			
MATHEMATICS (3 CR)			
	MATH 103X, F107X, F161X, F200X, F201X, F202X, F262X, or F272X; STAT F200X, or any math course having one of these as a prerequisite	MATH 107, 108, 109, 172, 200, 201, 272; STAT 252, 253, 307	MATH 107, 131 (or higher mathematics course for bachelor's degree); STAT 107 (or higher statistics course for bachelor's degree)
NATURAL SCIENCES (8 CR)			
Complete any two 4-cr natural science courses with lab sections	ATM F101X BIOL F100X, F103X, F104X, F111X, F112X, F115X, F116X CHEM F100X, F103X, F104X, F105X, F106X GEOG F211X GEOS F100X, F101X, F112X, F120X, F125X MSL F111X PHYS F102X, F103X, F104X, F115X, F116X, F175X, F211X, F212X, F213X	ASTR 103 & 103L, 104 & 104L; BIOL 102 & 103, 111, 112, 115, 116, 178 & 179; CHEM 103 & 103L, 104 & 104L, 105 & 105L, 106 &106L; GEOL 111, 115 & 115L, 178 & 179, 221; LSIS 102, 201, 202; PHYS 123 & 123L, 124 & 124L, 211 & 211L, 212 & 212L (each must include at least 1 credit of lab to meet UAF core requirement)	BIOL 103, 104, 105, 106, 111, 112; CHEM 103, 105, 106; ENVS 102; GEOL 104; GEOS 102; PHYS 102, 103, 104, 211, 212 (each must include at least 1 credit of lab to meet UAF core requirement)

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is not equal to a C (2.0) or better (the minimum grade required for prerequisite courses).

5. Any student who has completed a bachelor's degree from a regionally accredited institution will be considered to have completed the equivalent of the baccalaureate core and the associate of arts core when officially accepted to a baccalaureate degree program or associate of arts program at UAF. These students will also be considered to have completed the equivalent of the communication, computation and human relations requirements for the associate of applied science and the certificate.
6. Any student who has completed an associate of arts or an associate of science degree from a regionally accredited school satisfying one of the criteria below will be considered as having satisfied the 100- and 200-level UAF general education (core) requirements:
   a. The AA or AS degree is from the University of Alaska, or
   b. The public universities in the state in which the community college is located also waive their core requirements in recognition of completing an AA or AS degree, that is, have established a 2+2 program, or
   c. The community college and/or community college district is accredited by the Northwest Commission on Colleges and Universities (the agency that accredits UAF), or
   d. The associate program has been approved by the UAF Core Review Committee as satisfying the 100- and 200-level general education (core) requirements.
7. Students who satisfy UAF core requirements by meeting criteria described in 5 or 6 above may not have met prerequisite requirements for registration.
8. Transfer credit is not included in computation of the UAF GPA, except to determine eligibility for graduation with honors.

TABLE 6 **TABLE OF SUBSTITUTIONS: NON-UA INSTITUTIONS**

This table describes courses accepted by transfer to UAF, from institutions outside the University of Alaska system, which may substitute for UAF's core curriculum. Students transferring from either UAA or UAS should consult Table 5 – UA System 2011 – 2012 Table of Substitutions, or visit www.uaf.edu/admissions/undergrad/transfer/.

Core Curriculum Courses	Transfer Courses
MATH F107X—Functions for Calculus or MATH F103X—Concepts and Contemporary Applications of Mathematics	a 100-level or above mathematics course having a prerequisite of at least two years of high school algebra
MATH F200X, F201X, F202X, F262X, F272X, STAT F200X	a calculus or statistics course at the 100-level or above
ENGL F111X—Intro to Academic Writing	the required first semester composition course at the 100-level (must be basic freshman composition and not developmental)
ENGL F211X—Academic Writing About Literature OR ENGL F213X—Academic Writing About Soc & Nat Sciences	the second half of the introductory composition series at the 100-level or above
COMM F131X—Fundamentals of Oral Communication Group Context OR COMM F141X—Fundamentals of Oral Communication Public Context	a 100-level or above performance course in fundamentals of speech communication, public speaking or small group communication
Natural Sciences-8 credits	courses in basic natural sciences (biology, chemistry, earth sciences, physics) with labs, at the 100-level or above. Non-lab courses are transferable only as a second natural science course. To fulfill core requirements, a transfer student must complete two lab courses or two labs. Transfer of credit for courses in a natural science other than those listed requires approval of the dean of the College of Natural Science and Mathematics.
Perspectives on the Human Condition	
HIST F100X—Modern World History	a Western or non-Western civilization course at the 100- or 200-level (lower division), excluding individual national histories
ECON/PS F100X—Political Economy	a course in U.S. or comparative political economy, or U.S. economic history or macroeconomics at the 100-level or higher
ANTH/SOC F100X—Individual, Society and Culture	an introductory course in anthropology at the 100- or 200-level (lower division), an introductory-level course in sociology or lower-division social problems course, or a course in cross-cultural psychology
ENGL/FL F200X—World Literatures	an introductory or lower-division course in world or comparative literature
ART/MUS/THR F200X—Aesthetic Appreciation	a history or appreciation course in art, theatre or music at the 100-level or above
PHIL F322X—Ethics (Values and Choices)	an upper-division course in ethics, or, with approval of the philosophy department, a lower-division course in ethics
Other	
Library and Information Research (0–1 credit)	a 100-level library skills course
Foreign Language (may be substituted for 6 credits of Perspectives on the Human Condition)	two semester-length courses in a single Alaska Native language or other non-English language, or three semester-length courses (9 credits) in American sign language at the university level

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TABLE 7 **CLEP EXAMS CURRENTLY ACCEPTED**

Test Name	UAF Course	Credits
Algebra (College)	MATH F107X or F161X	4/3
American Government	PS F101	3
Biology, General	BIOL F115X/F116X	8
Calculus	MATH F200X	4
Chemistry, General	CHEM F105X/F106X	8
College Composition	ENGL F111X	3
College Mathematics	Mathematics elective credits	3
Financial Accounting	ACCT F261	3
French* (College level)	FREN F101/F102 FREN F201/F202	5/5 3/3
German* (College level)	GER F101/F102 GER F201/F202	5/5 3/3
History of the U.S. I	HIST F131	3
History of the U.S. II	HIST F132	3
Human Growth & Development	PSY F240	3
Humanities	Humanities elective credits	6
Natural Sciences	Natural science elective credits	6
Precalculus	MATH F107/F108	4/3
Principles of Microeconomics	ECON F201	3
Principles of Macroeconomics	ECON F202 or ECON F100X substitute	3
Psychology (Introductory)	PSY F101	3
Social Sciences/History	Social science elective credits	6
Sociology (Introductory)	SOC F100X or sociology elective	3
Spanish* (College level)	SPAN F101/F102 SPAN 2F01/F202	5/5 3/3
Western Civilization I	HIST F101 or HIST F100X substitute	3
Western Civilization II	HIST F102 or HIST F100X substitute	3

* *Two to four years language training required — total score determines credit award. Students should consult Table 5 or Table 6 (the tables of substitutions) to determine what other courses may meet baccalaureate core requirements.*

TABLE 8 **CEEB EXAMINATIONS CURRENTLY ACCEPTED**

Examination Name	UAF Course Equivalent	Credits
Art: History	ART F261/F262	6
Art: all other exams	ART electives*	6
Biology	BIOL F115X/F116X	8
Chemistry	CHEM F105X/F106X	8
Classics: Latin Lyric	LANG electives	8
Classics: Virgil (Level 3)	LANG electives	8
Comparative Government & Politics	PS F201	3
Computer Science A	CS F201	3
Computer Science AB	CS F201/F202	6
Economics—Macro	ECON F202 or ECON F100X substitute	3
Economics—Micro	ECON F201	3
English Language & Composition	ENGL F111X	3
English Literature & Composition	ENGL F111X	3
Environmental Science	GEOS F125X	4
European History	HIST F101/F102	6
French Language	FREN F101/F102	10
French Literature	FREN elective (200-level) FREN F201	2 3
German Language	GER F101/F102	10
German Literature	GER electives GER F201	2 3
Math: Calculus AB	MATH F200X	4
Math: Calculus BC	MATH F200X/F201X	8
Music: Listening & Literature	MUS F123 MUS electives	3 3
Music Theory	MUS F131/F132/F133/F134	8
Physics B	PHYS F103X/F104X	8
Physics C: Mechanics	PHYS F211X	4
Physics C: Electricity & Magnetism	PHYS F212X	4
Psychology	PSY F101	3
Spanish Language	SPAN F101/F102	10
Spanish Literature	SPAN elective (200-level) SPAN F201	2 3
Statistics	STAT F200X	3
U.S. Government & Politics	PS F101	3
U.S. History	HIST F131/F132	6
World History	HIST F100X	3

X = Course meets baccalaureate core requirement. L = Lab.
Students should consult Table 5 or Table 6 (the tables of substitutions) to determine what other courses may meet baccalaureate core requirements.
* *Portfolios may be submitted to the art department for further evaluation.*

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9. Class standing (e.g., freshman, sophomore, etc.) is based on the number of college credits accepted in transfer by UAF, combined with any courses completed in residence at UAF.
10. Credits may be awarded for formal service schooling and military occupational specialties (MOS) based on recommendations in the "Guide to the Evaluation of Educational Experience in the Armed Services," published by the American Council on Education. Credit completed through the Community College of the Air Force or Department of Defense courses is included in the category of military experience.
11. A student will be awarded credit for currently valid government and professional certifications that have been reviewed and approved for designated course equivalencies at UAF. A list of these programs is available in the Office of Admissions and the Registrar.
12. Credit may also be awarded for satisfactory completion of training programs, based on recommendations of the American Council on Education and the National Program on non-Collegiate Sponsored Instruction. The award of credit is subject to review and approval of appropriate UAF faculty.

TRANSFERRING CREDITS WITHIN THE UA SYSTEM

In general, undergraduate credits earned at the 100-level or above at a University of Alaska institution will transfer to UAF. In addition, in order to serve students who transfer among the three institutions that make up the University of Alaska system, UAF, UAA and UAS have identified fully transferable general education requirements for baccalaureate degrees.

Credit for course work successfully completed at one UA institution which applies to general education requirements will fulfill the same categories at all other UA institutions. This applies even if there is no directly matching course work at the institution to which the student transfers.

Transfer students from UAA or UAS who have completed all general education requirements in the baccalaureate program prior to transferring to UAF will have completed all requirements for the UAF baccalaureate core. Courses taken to complete the general education requirements at UAA or UAS will meet UAF baccalaureate core requirements according to the current UA table of substitutions (see Table 5). Students should notify the UAF Office of Admissions and the Registrar if they completed the general education requirements at UAA or UAS prior to enrollment in a major program of study at UAF.

Completion of the 35-credit lower-division requirements (100- and 200-level courses) of the UAF baccalaureate core meets the general education requirements at UAA and UAS.

For more information about transfer credit visit www.uaf.edu/admissions/undergrad/transfer/.

Alternative Ways to Earn Credit

UAF ADVANCED PLACEMENT CREDIT

- **English**
  Students with appropriate test scores may receive local advanced placement credit in English. Students with an SAT Writing score of 640 or higher, an ACT English score of 29 or higher, or an ACT Plus Writing score of 10 or higher, may receive credit for ENGL F111X upon completion of ENGL F211X or F213X with a C grade or better.

  To receive this credit, students must submit the application form for ENGL F111X credit, available from the Office of Admissions and the Registrar or the English department, to the Office of Admissions and the Registrar at the end of the semester in which ENGL F211X or 213X was successfully completed.
- **Alaska Native Language**
  After completing a course in which the student was placed (above 101) and earning a B grade or higher, the student may ask to receive credit for the two immediately preceding prerequisite courses, if any. However, credit cannot be awarded for such courses if university credit has already been granted. Credit will not be awarded for special topics courses, individual study courses, literature or culture courses, conversation courses, or any course taught in English.
- **Mathematics**
  Students placed in an advanced math course who have completed MATH F201X, 202X or 302 at UAF with a C grade or better may receive credit for any prerequisite calculus course(s). Students should contact the Department of Mathematics and Statistics for more information.

CREDIT BY EXAM

There are several ways to earn college credit by receiving a passing score on an exam. For any of the following credit by exam options, grades are not computed in the UAF GPA. Credit by exam is not considered UAF residence credit and is not considered to be part of the semester course load for classification as a full-time student. Credit by exam is awarded to current or previously enrolled degree-seeking students at UAF. The credit by exam options are briefly outlined here. For more information contact the UAF Office of Testing Services, 211 Gruening, 907-474-5277, email fytest@uaf.edu, or www.uaf.edu/testing/.

- **CLEP (College Level Examination Program)**
  CLEP is a national testing program that awards college credit for some introductory courses. The exams cost $102 each (costs subject to change) and are administered daily.

  See Table 7 for a list of CLEP exams accepted at UAF. To register for a CLEP exam or for more information, contact UAF Testing Services at 907-474-5277. The following criteria apply to CLEP exams:

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1. No credit will be awarded for successfully completing the general exam in the subject areas of humanities, social sciences/history, natural sciences or college mathematics if the student has already earned (from any source) 6 semester credits in any of the subject areas listed above.
2. Students may not duplicate a course for which credit has already been earned or in which the student is currently enrolled.
3. Students must wait at least one year after the end of an audited course before taking the CLEP exam for that course.
4. The minimum passing score for approved CLEP exams is 50 with the exception of the following listed foreign languages scores: French semester I and II, minimum 50, semesters III and IV, minimum 59; German semester I minimum 39, semester II minimum 50, semester III minimum 55, semester IV minimum 60; Spanish semester I minimum 39, semester II minimum 50, semester III minimum 57 and semester IV minimum 63.

- **College Board Advanced Placement Exams**
  UAF grants advanced credit, with waiver of fees, for exam results of three or higher on the College Board (CEEB) Advanced Placement Tests (see Table 8). These exams are normally taken during the junior or senior year in high school.

  To receive CEEB advanced placement credit, request that an official report of the exam results be sent to the Office of Admissions and the Registrar from the College Board. Credits may be earned for more than one advanced placement exam.
- **Credit for Language Testing**
  UAF accepts successful test results from Brigham Young University or other national testing programs (subject to Foreign Language Department approval) in languages for which no CLEP test is available, for a maximum of 12 credits. The first 10 credits may be applied to the core curriculum language requirement and any additional credits will be awarded general humanities credit. Results must be submitted directly to the Office of Admissions and the Registrar by the testing agency. For more information on foreign language testing opportunities, call UAF Testing Services at 907-474-5277, or email fytest@uaf.edu.

  Students who are speakers of non-English languages transferring from foreign partner universities to UAF are exempted from taking a foreign language test to demonstrate fluency in that language. Complete the language exemption/core credit waiver form and file it with the Office of Admissions and the Registrar. Upon approval, 6 credits of core Perspectives on the Human Condition coursework will be waived. This applies only to students participating in formalized articulation agreements established between UAF and partner institutions.
- **DANTES-DSST (Standardized Subject Tests)**
  DSST is a national testing program that offers exams in traditional academic, vocational/technical and business subject areas. Credit is awarded for successfully completing DSST tests as recommended by the American Council on Education. Acceptance of the DSST exam for a specific catalog course or as a major/minor requirement is subject to departmental approval. DSST exams cost $105 each (costs subject to change). To register for a DSST exam, call UAF Testing Services at 907-474-5277, or email fytest@uaf.edu about the availability of DSST testing.
- **International Baccalaureate**
  The International Baccalaureate Diploma Program is a two-year curriculum for students aged 16 to 19 and is similar to the final year of secondary school in Europe. Subject to departmental approval, UAF awards credit for IB higher-level exams on which students have earned a score of 4 or better. Students should submit an official copy of their IB exam results to the Office of Admissions and the Registrar.
- **UAF Credit by Exam**
  Credit by exam can be earned at UAF by students who are currently enrolled. 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 not duplicate a course for which credit has already been granted or in which the student is currently enrolled. Credit by exam may not be requested for audited courses until one year has passed since the end of the semester in which the course was audited.

  Credit by examination forms may be obtained online at www.uaf.edu/testing/, under UAF-Specific Tests, or at the Office of Testing Services in 211 Gruening. For more information on challenging a course call Testing Services at 907-474-5277.

CREDIT FOR PRIOR LEARNING

The Academic Advising Center administers the credit for prior learning program, wherein students may earn credit based on learning they have obtained outside the classroom. Students can document the university-level learning they have gained through employment, volunteer service or other life experiences with a portfolio or copies of licenses and certificates earned. Certificate, associate or bachelor's degree students may earn up to 25 percent of total program requirements through the credit for prior learning program.

Credentials for admitted degree students who are currently enrolled are reviewed by faculty from participating departments who determine if this process is appropriate and make recommendations for awarding prior learning credit. Review is based on equivalency to courses listed in this catalog. Credit received for prior learning does not affect your GPA and is not considered residence credit. The university will award transfer credit for specified national and state authorizations, certificates, credentials and/or examinations (see Transferring Credits, page 34) that do not need credit for prior learning review. For further information

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or assistance, contact the Academic Advising Center, 509 Gruening Building, 907-474-6396 or uaf.advising@alaska.edu. To access the credit for prior learning student handbook online, go to www.uaf.edu/advising/cpl/.

COMPETENCY TESTING

Students with appropriate background experience may address two components of the UAF Core Curriculum via competency testing. Credit by exam is not available.

- **Library Competency Exam**
  The Library Competency Exam, administered by UAF Testing Services, is offered to fulfill the core curriculum requirement for LS F101X and LS F100X. The LCE, offered daily in Testing Services for $25, is designed to test or verify a student's existing knowledge of standard library functions, services and organization. While no credit is awarded for passing this exam, a score of at least 85 percent will fulfill the core curriculum requirement for LS F101X and LS F100X. Please contact Testing Services at 474-5277 or 211 Gruening Building for more information.
- **Computer Skills Placement Exam**
  The Computer Skills Placement Exam, administered by UAF Testing Services, is offered to fulfill the degree requirement for AIS F101, required by students seeking a BBA degree at UAF. The CSP, offered daily in Testing Services for $25, is designed to test or verify a student's existing knowledge of information technology and file management procedures; word processing (Word), spreadsheets (Excel), databases (Access) and presentation (Powerpoint) software; and information and communication skills. While no credit is awarded for passing this exam, a score of at least 70 percent will fulfill the degree requirement for AIS F101. Please contact Testing Services at 474-5277 or 211 Gruening Building for more information.
- **Oral Communication Competency Exam**
  Requests for competency testing for COMM F141X—Fundamentals of Oral Communication, Public Context, will be considered only if, in the opinion of a member of the Communication Department faculty, a student presents evidence of substantive prior experience in formal public speaking situations (competency testing is not available for COMM F131X). Neither prior oral intensive coursework, nor COMM F442—Professional Public Speaking, are considered evidence of substantive prior experience. If the prior experience is sufficient, the individual will be asked either: a) to provide a video (not audio) recording of a formal public speaking presentation at least 10 minutes in length, or b) to present a 10 minute persuasive speech before a live audience, with at least one member of the Communication Department faculty present. This process may be attempted only once. The date for live speeches will be established each semester, at a single time during the fourth to sixth week of classes. While no credit is awarded for passing this exam, a grade of at least a B (3.0) for either type of presentation will fulfill the core curriculum requirement for COMM F141X. For more information and an application for competency testing, contact the Department of Communication at 474-6591 or 503 Gruening.

INDEPENDENT LEARNING

The Independent Learning Program, administered by the Center for Distance Education, offers an alternative for people who seek a college education but cannot attend classes. The unique advantage of independent learning, often called e-learning, is its flexibility. Students select their own hours of study and work at their own pace in surroundings they choose. E-learning offers the freedom to structure a personal academic schedule and continue educational progress, even when personal circumstances make it impossible to attend scheduled classes.

For UAF students, UAF e-learning courses count as residence credit. When a student enrolls in an e-learning course during the regular semester enrollment period and completes the course during the same semester, the course may be used to determine full-time/part-time status and eligibility for financial aid and scholastic action. The grade will average in your semester and cumulative GPAs.

When students enroll in an e-learning course at other times of the year, the credit and grade will not affect the credit load or semester GPA for any other semester enrollments but will be counted in cumulative totals. It's important to realize that enrollment in these year-based courses does not count toward current semester credit load, and therefore, is not included in determining full-time or part-time student status. The student's status (full- or part-time) can affect things like financial aid or athletics eligibility.

The Center for Distance Education maintains a comprehensive website at http://distance.uaf.edu where policies regarding enrollment, transfer, withdrawal, extension, fees, materials and course descriptions may be found. A printed listing of courses and CDE policies may also be requested. For more information contact the Center for Distance Education at 2175 University Avenue South in Fairbanks, phone: 800-277-8060 or 907-479-3444, fax: 907-479-3443, email: distance@uaf.edu or online at http://distance.uaf.edu.

The University of Alaska provides many possibilities for students to take distance-delivered courses. The campuses at Anchorage, Fairbanks and Juneau, along with their community college networks, offer hundreds of courses using a variety of delivery modes. Opportunities for students who prefer distance-delivered courses can be found at the University of Alaska Distance Learning website at http://distance.alaska.edu.

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Registration

You must register and pay tuition and fees to attend classes and earn credit. Registration is held each semester on dates published in the academic calendar (see inside front cover for the Fairbanks campus). For special programs, short courses, seminars and other classes not part of the regular academic calendar, registration is as needed.

Details about procedures and schedules for registering are published online and in separate publications at each campus and branch campus. Registration instructions for the Fairbanks campus are provided in the UAF registration guide, available in March for the upcoming fall semester and in November for the upcoming spring semester. The same information is available online at http://uaonline.alaska.edu or www.uaf.edu/register/.

If you register for courses, the university holds you financially responsible for payment of your tuition and fees. **The university will not drop your registration if you do not pay.** Other consequences for non-payment include not being able to receive your grades or transcripts.

MANDATORY ACADEMIC ADVISING

Academic advising is an important part of planning for your education. Degree-seeking students must obtain an academic advisor's signature every semester to begin the registration process. All degree and certificate students are required to have an academic advisor. You will work in tandem with your academic advisor to develop a viable educational plan that reflects your academic interests and goals. Your academic advisor will assist you in determining the best options, alternatives and sequences of classes to take. Non-degree students may also see an academic advisor, and it is recommended for those taking 9 or more credits in a semester or for those who have accumulated 30 or more UAF credits. Non-degree students who have been academically disqualified must meet with an academic advisor each semester to develop a realistic and timely educational plan. Academic advising is available at several campuses. See Services and Resources, page 74, for more information.

TABLE 9 **IMPORTANT REGISTRATION CHANGE DEADLINES**

Action*	Begins**	Ends	Notes
Adding a class	First day of registration for the semester	Second Friday after the first day of instruction for the semester	Advisor's signature not required
Dropping a class (class does not appear on transcript)	First day of registration for the semester	Third Friday after the first day of instruction for the semester	Advisor's signature required for student in degree program after the second Friday after the first day of instruction
Faculty-initiated drop (class does not appear on transcript)	First day of instruction for the semester	Third Friday after the first day of instruction for the semester	Faculty member will notify the Office of Admissions and the Registrar
Withdrawing from a class (class appears on transcript with W grade)	After the third Friday after the first day of instruction for the semester	Ninth Friday after the first day of instruction	Advisor's signature required for student in degree program
Dropping or withdrawing from all of your classes	First day of registration for the semester	Ninth Friday after the first day of instruction	Advisor's signature required for student in degree program. Total withdrawal form must be completed.
Credit-no-credit option	First day of registration for the semester	Third Friday after the first day of instruction for the semester	Undergraduates only Only electives not specified in a student's core, major, minor and degree programs are eligible for this option.
Faculty-initiated withdrawal (class appears on transcript with W grade)	After the third Friday after the first day of instruction for the semester	Ninth Friday after the first day of instruction for the semester	Faculty member will notify the Office of Admissions and the Registrar. Students receive an email notification at their UAF account.
Late withdrawal from a class***	After the last day for student-initiated withdrawals	Last day of instruction for the semester	Advisor's signature required for student in degree program; class instructor signature required for all students
Appeal for late withdrawal	After the last day for student-initiated withdrawals	20 class days after the beginning of the next regular semester	Reviewed by a campus appeals committee

Add/drop forms (if necessary), total withdrawal forms and credit-no-credit forms must be submitted to the Office of Admissions and the Registrar by the appropriate deadlines.

* *Add, drop, withdrawal and credit-no-credit option deadlines will be adjusted proportionally for courses that are less than a semester in length.*

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

*** *Late withdrawals are allowed for exceptional cases only and approval is not automatic.*

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PLACEMENT TESTS

Test results are required for first-time degree or certificate students, transfer students with fewer than 30 acceptable credits, or students planning to take 100-level English, reading, mathematics, natural sciences core and perspectives on the human condition core courses. Results from American College Testing Program (ACT) or the Scholastic Aptitude Test (SAT) or, for associate degree or certificate students, the ASSET, ACCUPLACER or COMPASS test must be on file with the Office of Admissions and the Registrar before you can register for classes. A hold may be placed on your ability to register if you have not submitted required test scores.

NON-DEGREE STUDENTS

Anyone who wants to attend classes at UAF as a non-degree student may register, as long as they have the appropriate permissions. Students under the age of 18 may take courses as a non-degree student. Upon turning 18, they may apply for admission to an associate or certificate program. Current high school students should refer to the High School and Secondary School Students section below.

Non-degree students are subject to placement examination requirements for courses, and they must maintain a 2.0 GPA to remain in good standing. Any non-degree student who wants to be considered a degree candidate must submit an application for admission, meet regular admission requirements and submit transcripts. Non-degree students are not eligible for financial aid or priority registration.

It's important for potential graduate students to understand that credits earned as a non-degree student might not be accepted for use toward a graduate degree program. Please see the transfer credit section of How to Earn a Graduate Degree (page 198).

HIGH SCHOOL AND SECONDARY SCHOOL STUDENTS

High school and secondary students may take classes at UAF. One program, Alaska Higher Education Admission Decision (AHEAD), requires formal admittance to UAF (see Admissions Requirements). Secondary student enrollment and TECH PREP, however, do not entail formal admission.

- **Secondary Student Enrollment**
  The secondary student enrollment process allows secondary school students to register for UAF classes. A student meeting course prerequisites may enroll in university classes with permission of the instructor or the department head. Students must consult their appropriate school district officials and school counselors for approval prior to registration if they wish to use university courses to meet high school graduation requirements.

  Registering for courses at UAF establishes a permanent academic record that reflects student academic performance in all courses attempted.
  Note: Enrollment in UAF courses as a secondary student does not constitute formal admission to the university for the purposes of earning a certificate or degree.

- **Tech Prep Opportunities**
  The Tech Prep program allows students to earn credits toward a UAF certificate or associate degree by completing career and technical education classes in high school that have been approved for college credit by UAF. The classes available for credit vary from school to school, but in general, they are taken from the following areas: applied business; automotive; airframe and powerplant; human services; computer information office systems; allied health; drafting; emergency medical services; and welding. For more information, contact your high school counselor or the Community and Technical College at 907-455-2800.

Adding, Dropping and Withdrawing from Classes

Information about the add/drop process can also be found at http://uaonline.alaska.edu, in the registration guide at the Office of Admissions and the Registrar or at www.uaf.edu/register/. Adds, drops and withdrawals are not final until the student has completed the appropriate procedure, paid any relevant fees or tuition and submitted all necessary paperwork to the Office of Admissions and the Registrar. If you drop a class within specified time frames, the course will not be part of your academic transcript. Important deadlines are listed in Table 9.

NON-ATTENDANCE DROP POLICY

Students are expected to begin attending classes on the first day of instruction. Some departments, in trying to find space for students on wait lists, require that you attend the first class session or notify the department in advance that you cannot attend the first class. If you miss the first class without notifying the department, you may be dropped from the course, and the space may be assigned to a student on the wait list.

At the Fairbanks campus, the online coursefinder at www.uaf.edu/coursefinder/ provides information on which courses use the non-attendance drop policy.

Because of the high demand for composition (ENGL F111X, 211X, 213X, 313 or 414) and basic speech (COMM F131X or 141X) courses, students who fail to attend either of the first two meetings of a basic course will be dropped even if they registered in advance and paid their fees. If space becomes available in a class from which you have been dropped by the department, you need to follow the add procedure to re-enroll.

WITHDRAWING

- **Withdrawing from a Class**
  If you withdraw from a class later than the third Friday after the first day of instruction (last day to drop classes), a grade of W appears on your academic record. The W grade does not affect your GPA. However, it may impact your financial aid. Be sure to check with the Financial Aid Office before withdrawing from classes.

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The last day you can withdraw from a class is the ninth Friday after the first day of instruction. For specific dates, see the academic calendar on the inside cover of this catalog. Fees and tuition are not automatically refunded for W grades.

- **Total Withdrawal from All Your Classes**
  If you want to withdraw from all your classes later than the third Friday after the first day of instruction (last day to drop classes), use a Total Withdrawal form available at www.uaf.edu/reg/ or from the Office of Admissions and the Registrar. You'll receive a W grade for all classes, which does not impact your GPA. A student-initiated total withdrawal is subject to the same deadlines as withdrawal from a class. For specific dates, see the academic calendar on the inside cover of this catalog. Fees and tuition are not automatically refunded for W grades.

WITHDRAWALS AFTER THE DEADLINE

Appeals for a late withdrawal after the student-initiated withdrawal deadline — the ninth Friday after the first day of instruction — are exceptions to policy and are allowed only in exceptional cases. Approval is not automatic, and you need to provide documented evidence to support your request. Acceptable serious and compelling reasons may include: 1) death in immediate family; 2) serious illness or injury of student or immediate family; and 3) factors outside of student's control (for example, major employment change, fire, flood). Failing a course, avoiding an unsatisfactory grade or ignorance of policies are not serious and compelling reason for seeking a late withdrawal and will not be approved.

Appeals for late withdrawals must be submitted within 20 class days after the beginning of the next regular semester. Forms for an appeal for late withdrawals are available online at www.uaf.edu/reg/forms/, through the Office of Admissions and the Registrar in Signers' Hall at the Fairbanks campus or through local campus student services offices. Once received, the appeal will be evaluated by a campus-wide committee which will return a decision to the student. The decision of the university is final and a student who files a written appeal under these procedures shall be expected to abide by the final disposition of the review, as provided, and may not seek further appeal of the matter under any other procedure within the university.

FACULTY-INITIATED DROP OR WITHDRAWAL

Class instructors have the right to drop students who do not meet course prerequisites, did not obtain a grade of "C" (2.0) or better in all prerequisite courses or who have not participated substantially in a course. Faculty-initiated drops submitted through the third Friday after the first day of instruction will be treated as a dropped class and will not appear on any student transcript. The faculty-initiated withdrawal may occur after the third Friday but before the ninth Friday after the first day of instruction. A grade of W will appear on a student's academic record for faculty-initiated withdrawals.

Where to Get More Information

Office of Admissions and the Registrar
University of Alaska Fairbanks
102 Signers' Hall
P.O. Box 757495
Fairbanks, AK 99775-7495
Email: registrar@uaf.edu
Online: www.uaf.edu/reg/
Telephone: 907-474-7500

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Term instructor Sherri Wall uses a stylus to draw a chart visible to students as she lectures to her political economy class in Schaible Auditorium.

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Academics and Regulations

To encourage a positive learning environment and high academic standards, universities establish specific scholastic requirements and community rules. At UAF, academic regulations address issues such as grading, academic standing, and student rights and responsibilities. Since policies change from time to time, it's important for students to stay informed about current requirements. By enrolling at UAF, a student agrees to abide by university rules, regulations and academic standards.

Communication via Email

UAF uses email to communicate with students about many regulations, requirements and responsibilities. Email is often the only way some information is distributed so it's important for you to regularly check your university email account or to forward mail from your UAF account to an account you check frequently. The university automatically assigns you an official UAF email account when you first register for classes. You're responsible for knowing — and when appropriate, acting on — the contents of all university communications sent to your official UAF email account. If you want to receive university communications at a different email address, you need to forward email from your assigned UAF account to an email address of your choice. You can easily do this online at www.alaska.edu/google/.

Class Standing

Undergraduate students — Class standing is determined by the total credits you have earned.

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 — Students are given the class standing of "graduate" only after being officially admitted to a master's or doctoral program.

Full- or Part-time Status/Study Load

Undergraduate students — Undergraduate students registered for 12 or more semester credits are classified as full-time students and those enrolled in 6 credits are considered half-time students. 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 more than 18 credits you need a 3.0 cumulative GPA and an overload approval from your advisor.

Credits carried at any UA unit (or any combination of UAF/UAA/UAS) are used to determine study load hours and full-time or part-time classification. Audited courses, courses taken for credit by examination and year-long correspondence study courses are not included in the study load computation.

Graduate students — A graduate student who is registered for 9 or more semester credits, with 3 or more at the 600-level, is classified as a full-time student (audited credits are not counted toward workload). A graduate student enrolled in 5 credits is classified as half-time. Except in unusual circumstances, enrollment in the fall/spring semesters is limited to 1 credit per week. You may enroll in up to 14 credits per semester without special permission. To enroll in 15 – 19 credits you must be in good standing and obtain an overload approval from your advisor and department chair. Enrollment in more than 19 graduate credits will be allowed only in extraordinary circumstances, and requires good standing and overload approval from your advisor, department chair, dean and the dean of the graduate school.

Enrollment in the three-week summer session is limited to 3 – 4 credits per session, and enrollment in the six-week summer session is limited to 6 – 8 credits per session.

Credits carried at any UAF department are considered in determining study load hours and full-time or part-time classification. Courses that are audited are not included in the study load computation.

Grading Options

CREDIT/NO-CREDIT OPTION

Undergraduates only — The credit/no-credit option encourages students to explore areas of interest not necessarily related to their major. This option may be used for one undesignated elective (an elective that is not specifically required for your major) each semester. The deadline for choosing the credit/no-credit option is the third Friday after the first day of instruction for a semester. The instructor does not 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 grade (2.0) or higher; if your performance falls below that level, the course will not appear on your academic record. In either case, the course will not be included in any GPA calculations. If credit is granted, a CR grade will be entered for the course.

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Under the credit/no-credit option, students may take undesignated elective courses or courses to meet the minimum credit requirements for a degree. Major or minor requirements and those specified as foundation courses are not allowed.

AUDITING

Students who want to enroll in one or more courses for informational purposes may only register as an auditor if space is available and auditing is permitted 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. A grade of AU (audit) is granted to students who complete an audited course, but no credit is awarded. Audited courses do not apply toward degree requirements, and they will not transfer to other institutions.

When you register you should indicate on the registration form your desire to audit a course. Students who want to change from audit to credit must request the change before the deadline to add a course. Requests made after the third Friday after the first day of instruction must be approved by the instructor of the course. All changes must be made before the deadline for student-initiated withdrawals.

Instructors set the requirements under which an AU grade is to be recorded, and they must submit AU for students who satisfy requirements. Auditors not receiving an AU grade receive a W grade. If you have audited a class, you cannot request local credit by exam for that class for a period of at least one year.

CHANGING FROM CREDIT TO AUDIT

The add/drop process may be used to change from credit status to audit status for a class. The change must be made by the end of the second full week of instruction by following the add/drop process. Changes after this date require approval by the instructor of the course. For degree-seeking students an advisor's signature is also required. You may not change from credit to audit after the last day for student-initiated withdrawals.

Grading System and Grade Point Average Computation

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. Instructors are expected to state their grading policies in writing at the beginning of each course. Grades appearing on academic records are:

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

B Indicates outstanding ability above the average level of performance.

C Indicates a satisfactory or average level of performance.

D The lowest passing grade, indicates work of below-average quality and performance.

F Indicates failure. All F grades, including those earned in pass/fail courses, are included in the GPA calculations.

P **Pass —** The pass grade indicates satisfactory completion of course requirements at either the undergraduate or graduate level. A pass grade does not affect your GPA 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 C grade (2.0) or better in undergraduate course work and B grade (3.0) 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 —** This designation is used for courses such as theses and special projects, which require more than one semester to complete. It indicates that course requirements cannot be completed or when institutional equipment breakdown resulted in non-completion by the end of the semester. Credit may be withheld without penalty until the course requirements are met within an approved time.

AU **Audit —** A registration status indicating that you have enrolled for informational instruction only. No academic credit is granted. You may be given a W if you fail to attend a course you are auditing.

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

I **Incomplete —** An incomplete is a temporary grade used to indicate that the student has satisfactorily completed (C or better) the majority of work in a course but for personal reasons beyond the student's control, such as sickness, has not been able to complete the course during the regular semester. Normally, an incomplete is assigned in a case when the student is current in the class until at least the last three weeks of the semester or summer session. Negligence or indifference are not acceptable reasons for an "I" grade.

Instructors include a statement of work required of the student to complete the course at the time the "I" grade is assigned and a copy of the notice of the incomplete grade will be sent to the dean of the school or college in which the course is given.

An incomplete must be made up within one year or it will automatically be changed to an "F" grade. One year is the longest amount of time allowable for

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completion of the "I." The "I" grade is not computed in the student's grade point average until it has been changed to a regular letter grade by the instructor or until one year has elapsed, at which time it will be computed as an "F." A senior cannot graduate with an "I" grade in either a university or major course requirement. To determine a senior's grade point average for honors at graduation, the "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.

NS **Not Submitted —** Grade not submitted by instructor.

The letter grades A, B, C and D may include a "+" or "-" to indicate that a student's level of performance is slightly higher or lower than that of the letter grade alone.

- **Computing your GPA**
  Your grade point average (GPA) is a weighted numerical average of the grades you earn in your courses at UAF. To compute your GPA, divide the total number of credits you have attempted into the total number of grade points you have earned. Grade points are calculated by multiplying the number of grade points awarded, according to the chart below, by the number of credits attempted for the course. The following grades are figured in your GPA: A+, A, A-, B+, B, B-, C+, C, C-, D+, D, D- and F. Grades of I, DF, W, P, NB, AU and CR do not carry grade points and do not affect your GPA.

Grade	Grade points per credit
A+	4.0
A	4.0
A-	3.7
B+	3.3
B	3.0
B-	2.7
C+	2.3
*C	2.0
**C-	1.7
D+	1.3
D	1.0
*** D-	0.7
F	0.0

* Minimum grade possible for a course to count toward major, minor or degree requirements; or as a prerequisite for another course.
** Minimum grade possible for a course to count toward baccalaureate core.
*** Minimum grade possible to earn credit for a course.

TABLE 10 **EXAMPLE OF GRADE POINT AVERAGE COMPUTATION**

Course	Credits	Grade	Credits x Grade points per credit	= Grade points
BIOL F111X	4	A	4 cr x 4 pts	16
COMM F131X	3	D+	3 cr x 1.3 pts	3.9
ENGL F111X	3	C-	3 cr x 1.7 pts	5.1
MATH F107X	3	B-	3 cr x 2.7 pts	8.1
HIST F131	3	F	3 cr x 0 pts	0
Total	**16**			**33.1**
			33.1 grade points ÷ 16 credits = 2.07 GPA	

Non-credit courses, transfer credits and credit by examination do not affect the GPA calculations. Your "graduating GPA" is your cumulative grade point average at the time of graduation. If, after earning a bachelor's degree, you take more classes from UAF as a non-degree student, grades for those courses won't be factored into your official graduating GPA. The exception is students who are officially admitted to a second degree program.

- **Repeating Courses**
  All grades (original and retakes) for a course completed at UAF 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. For purposes of calculating honors for graduation, all courses (even those repeated) are included in the GPA.

Attendance

You are expected to attend classes regularly; 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 are required to participate in either military exercises or UAF-sponsored activities that will cause you to miss class, you must notify your instructor(s) as soon as possible of your absence. You must notify your instructor(s) of all scheduled UAF-required absences for the semester (e.g., travel to athletic events) during the first week of classes.

You and your instructor will make a good-faith effort to make suitable arrangements to assure that you can make up classes and work you miss and are not penalized for your excused absence. If suitable arrangements cannot be made, you will be allowed to withdraw from the course without penalty. However, your instructor is under no obligation to allow you to make up missed work for unexcused absences or if notification and arrangements are not made in advance of the absence.

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Academic Progress

Freshman progress reports help students gauge their class performance and, if necessary, seek assistance early in the term. Instructors are responsible for ensuring that students are aware of the grading policy for a course and that homework, exams and other assignments are returned to students in a timely manner. Instructors who have freshmen enrolled in their classes are expected to submit freshman progress reports early in each semester.

Academic Standards

UAF's scholastic standards are designed to help students take action before their academic record deteriorates to the point that readmission to UAF or another institution is difficult. In all cases involving poor scholarship, students are encouraged to consult with their advisor, instructors or dean.

Undergraduate and certificate students, or non-degree students enrolled in 12 or more credits, are subject to scholastic action if they fail to earn a GPA of 2.0 at the end of the semester. Scholastic action may result in probation or disqualification from the university.

GOOD STANDING

Undergraduate students **—** You are in good standing if your cumulative GPA and most recent semester GPA are 2.0 or better.

Graduate students **—** To maintain good academic standing in UAF graduate programs, students must:

a. Maintain a cumulative GPA of 3.0 in courses taken since admission to graduate school. Before advancing to candidacy, however, a cumulative GPA of 3.0 is required. You must earn at least a B grade in 400-level courses.

b. Be registered at UAF with a minimum of 6 graduate or 400-level credits per year unless on approved leave of absence.

c. Abide by all parts of the Student Code of Conduct.

d. Have a current graduate study plan or an advancement to candidacy submitted and approved, unless you are still within the first year of graduate study.

e. Have on file with the Graduate School by May 15 of each year an annual report from the graduate advisory committee, certifying satisfactory progress. This is the responsibility of the student. Students starting in January need not submit an annual report until May of the next academic year. If a satisfactory annual report is not filed as specified, the student may be placed on probation.

f. Pass any required qualifying exams or comprehensive exams. Departments may set the number of times a student may retake an exam.

ACADEMIC HONORS

Undergraduate and certificate students **—** 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 UA institutional credits graded with the letter grades A+, A, A-, B+, B, B-, C+, C, C-, D+, D, 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. Academic honors are recorded on your permanent record. You will make the chancellor's list with a semester GPA of 3.9 and the dean's list with a GPA of 3.5 or higher. UAF announces the students who have earned honors each semester. Students with incompletes or deferred grades that are changed after publication of honors will not be announced separately. If you've requested that information not be released about you (under FERPA), your name will not be released to the media.

PROBATION

Undergraduate students **—** Students whose cumulative and/or semester GPA falls below 2.0 after each fall and spring semester will be put on academic probation. Students on probation may not enroll in more than 13 credits a semester, unless an exception is granted by the appropriate dean. Probation may include additional conditions, as determined by the dean of the college or school in which the student's major is located. Students on probation will be referred for developmental advising/education and/or to an advising or support counseling center. The student will work with an academic advisor to prepare an academic plan for achieving a higher GPA; the advisor is responsible for forwarding this plan to the appropriate dean. A student on probation will not be allowed to register unless the academic plan is on file. Removal from probation requires the student's cumulative and semester GPAs to be at least 2.0.

Graduate students **—** Probationary status indicates a student is not in good standing. When a student is placed on probation, the dean of the school or college and the advisory committee will tell the student what requirements are necessary to be returned to good standing. If a student does not return to good standing by the end of two semesters, he or she may be dismissed from the degree program.

ACADEMIC DISQUALIFICATION

Undergraduate students **—** Undergraduate students on probation whose semester and/or cumulative GPA falls below a 2.0 for two consecutive regular (fall/spring or spring/fall) semesters will be placed on academic disqualification. Academically disqualified students may continue their enrollment at UAF only as non-degree students, are limited to 10 credits per semester and are ineligible for most types of financial aid.

To be eligible for readmission to an academic degree program, the student must:

1. Achieve a 2.0 cumulative grade point average by repeating courses previously failed at UAF and reapply for admission,
   or

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2. Complete 9 credits for a baccalaureate or associate program, or 6 credits for a certificate program, with a GPA of 2.0 or higher. The courses may be completed at UAF and/or another regionally-accredited institution and must be letter-graded. Grades of P or CR will not be considered. In considering students for readmission, deans will look for coursework taken that relates to the student's intended program.

Students seeking readmission into an occupational endorsement program must have a 2.0 GPA.

Readmission to a degree program is not automatic or guaranteed. The student must reapply and the application must be approved by the dean. The student may apply to the same program from which they were disqualified, or to a different program or level (e.g. baccalaureate, associate or certificate). Readmission may be granted with a status of probation or with other conditions as specified by the dean. It is vitally important for academically disqualified students to work closely with their academic advisor in developing a realistic and timely educational plan.

ACADEMIC DISMISSAL

Graduate students **—** If recommended by the department chair, graduate advisory committee and dean of the college or school, and approved by the dean of the Graduate School, a student will be dismissed because of unsatisfactory performance. Unsatisfactory performance is deemed as one or more of the following:

a. Exceeding maximum time limit for degree.
b. Not being registered at UAF for a minimum of 6 credits per year unless on approved leave of absence.
c. Having less than a 3.0 cumulative GPA for courses taken since admission to graduate school.
d. Being on probationary status for more than two consecutive semesters.
e. Violating the Student Code of Conduct.
f. Lacking progress as judged by the advisory committee and documented on the student's annual report.
g. Having substantive inaccuracies in the original application for admission.

If the student does not have a graduate advisory committee, dismissal can occur upon the recommendation of the department chair and the dean of the college or school, with approval by dean of the Graduate School.

Appeal of Academic Decisions

GRADE ERROR POLICY

A grade, other than an incomplete or deferred, submitted by your instructor after a course is completed is your final grade and becomes part of your permanent academic record. Your grade will not be changed unless your instructor made a legitimate error in calculating the grade. If you believe an error has occurred contact your instructor immediately. Grade error corrections must be received within 20 class days after the beginning of the next regular semester, and must be approved by the instructor's department head and dean. This is not an appeal of an academic decision.

GRADE APPEALS POLICY

A student who wishes to appeal a faculty decision on a final grade must submit a grade appeal form, available at the Office of Admissions and the Registrar. Appeals must be received within 20 class days after the beginning of the next regular semester. By submitting a grade appeal, the student acknowledges that no additional mechanisms exist within the university for the review of the grade, and that the university's administration can not influence or affect the outcome of the review. A copy of the full procedure can be obtained online on the registrar's website at www.uaf.edu/reg/ or through the Office of Admissions and the Registrar, the vice chancellor of students, the Academic Advising Center or any community campus office.

ACADEMIC DECISIONS OTHER THAN GRADES

Students who want to appeal an academic decision such as denial of admission, faculty-initiated withdrawal, dismissal from program or pass/fail decisions of a faculty committee on non-course examinations (such as qualifying, comprehensive or thesis examinations) must submit an appeal within 20 class days after the beginning of the next regular semester.

To appeal academic decisions, you should first address the person who made the decision. Often problems can be resolved and misunderstandings cleared up through this step. If the student does not find the informal review decision acceptable, the student may initiate a formal appeal procedure. Formal appeals must be made in writing, and must be received by the Provost no later than 10 days after the student has learned the outcome of the informal review. The office of the provost, university registrar, vice chancellor of students, or dean of the graduate school (for graduate student issues) can give you advice and answers to questions about the process.

By submitting a request for a review, the student acknowledges that no additional mechanisms exist within the university for the review of the decision, and that the university's administration can not influence or affect the outcome of the review.

Students' Rights and Responsibilities

The university subscribes to principles of due process and fair hearings as specified in the "Joint Statement on Rights and Freedoms of Students." This document can be found in the Division of Student Services. You are encouraged to read it carefully.

Most students adjust easily to the privileges and responsibilities of university citizenship. The university attempts to provide counsel for those who find the adjustment more difficult. UAF may terminate enrollment or take other

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necessary and appropriate action in cases where a student is unable or unwilling to assume the social responsibilities of citizenship in the university community.

STUDENT CODE OF CONDUCT

UAF students are subject to the Student Code of Conduct. In accordance with board of regents' policy 09.02.01, UAF will maintain an academic environment in which freedom to teach, conduct research, learn and administer the university is protected. Students will benefit from this environment by accepting responsibility for their role in the academic community. The principles of the student code are designed to encourage communication, foster academic integrity and defend freedoms of inquiry, discussion and expression across the university community.

UAF requires students to conduct themselves honestly and responsibly, and to respect the rights of others. Conduct that unreasonably interferes with the learning environment or violates the rights of others is prohibited. Students and student organizations are responsible for ensuring that they and their guests comply with the code while on property owned or controlled by the university or at activities authorized by the university.

The university may initiate disciplinary action and impose disciplinary sanctions against any student or student organization found responsible for committing, attempting to commit or intentionally assisting in the commission of any of the following prohibited forms of conduct:

a. cheating, plagiarism or other forms of academic dishonesty
b. forgery, falsification, alteration or misuse of documents, funds or property
c. damage or destruction of property
d. theft of property or services
e. harassment
f. endangerment, assault or infliction of physical harm
g. disruptive or obstructive actions
h. misuse of firearms, explosives, weapons, dangerous devices or dangerous chemicals
i. failure to comply with university directives
j. misuse of alcohol or other intoxicants or drugs
k. violation of published university policies, regulations, rules or procedures
l. any other actions that result in unreasonable interference with the learning environment or the rights of others.

This list is not intended to define prohibited conduct in exhaustive terms, but rather offers examples as guidelines for acceptable and unacceptable behavior.

Honesty is a primary responsibility of you and every other UAF student. The following are common guidelines regarding academic integrity:

1. Students will not collaborate on any quizzes, in-class exams, or take-home exams that contribute to their grade in a course, unless the course instructor grants permission. 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.

Alleged violations of the Code of Conduct will be reviewed in accordance with procedures specified in regents' policy, university regulations and UAF rules and procedures. For additional information and details about the Student Code of Conduct, contact the dean of students or visit www.alaska.edu/bor/.

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. Contact the dean of students for more information.

Information Release and FERPA

The Office of Admissions and the Registrar is responsible for keeping student education records. The Family Educational Rights and Privacy Act (FERPA) of 1974, as amended, protects the privacy of education records, establishes the right of students to inspect and review their education records, and provides guidelines for the correction of inaccurate or misleading data through informal and formal hearings.

FERPA affords students certain rights with respect to their education records. They are:

1. The right to inspect and review the student's education records within 45 days of the day the university receives a request for access. Students should submit a written (letter or FAX) request to the Office of Admissions and the Registrar that identifies the record(s) they wish to inspect. The registrar will make arrangements for access and notify the student of the time and place where records may be inspected. If the records are not maintained by the Office of Admissions and the Registrar, registrar-designated staff will refer the student to the appropriate personnel or office to access the record.
2. The right to request the amendment of a record that they believe is inaccurate or misleading. A student may ask the university to amend the student's education

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records if he/she believes they are inaccurate or misleading or otherwise in violation of the student's privacy or other rights. If the university decides not to amend the record as requested by the student, the university will notify the student of the decision and advise the student of his or her right to a hearing regarding the request for amendment. If the university denies the amendment request after the hearing, the student is given the right to insert a statement in the education record.

3. The right to consent to disclosures of personally identifiable information contained in the student's education records, except to the extent that FERPA authorizes disclosure without consent. The university may release, without consent, certain directory information.

The university discloses education records without a student's written consent under the FERPA exception for disclosure to school officials with legitimate educational interests. A school official is a person designated by the university to perform an assigned function on behalf of the university, including an individual employed by the university as an administrator, supervisor, instructor, or administrative staff member (including law enforcement unit personnel and health staff) or a volunteer; a person or company with whom the institution has contracted to perform a service instead of using university employees (such as an auditor, attorney, or other third party); a member of the Board of Regents; a governmental entity or any other entity with which a student is placed as part of his or her education; or a student serving on an official committee (such as a judicial or academic review committee or scholarship committee), or assisting another university official in performing his or her tasks. A university official has a legitimate educational interest if the official needs the student's education record in order to perform work appropriate to his or her position. Upon request, the university also discloses education records without consent to officials of another school in which a student seeks or intends to enroll, or where the student is already enrolled.

The following information is designated as directory information by the university:

a. Names of students
b. Dates of attendance at the university
c. Program/major field(s) of study
d. Degrees and certificates received including dates
e. Participation in officially recognized university activities
f. Academic and co-curricular awards, honors, and scholarships received and dates received
g. Weight and height of students on athletic teams
h. Students' electronic mail addresses
i. Hometown; city and state

A student may inform the Office of Admissions and the Registrar in writing that he/she does not give permission for the university to release his/her directory information or may submit the request through UAOnline at http://uaonline.alaska.edu. The request is valid until a subsequent request to release directory information is received in writing or through UAOnline.

Students have the right to file a complaint with the U.S. Department of Education concerning alleged failures by the university to comply with the requirements of FERPA. The name and address of the office that administers FERPA is:

Family Policy Compliance Office
U.S. Department of Education
400 Maryland Avenue, SW
Washington, DC 20202-5920

The University of Alaska Board of Regents' Policy and University Regulation (09.04.) regarding education records can be reviewed at www.alaska.edu/bor/policy-regulations/.

- **Honors and Scholarships**
  Names of students receiving awards, scholarships or appearing on the dean's list or chancellor's list are released to the media unless a student has either requested that directory information not be released or has submitted a written request to the Office of Marketing and Communications not to release honors information by five working days after the end of the semester in which the honors were earned.

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UAF photo by Maureen McCombs.

Costs *and* Financial Aid

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Shawna Wilson, Kiara Martin, Jordan Culver, Alana Samuel and Katherine Vaught work on a dance routine in their hip-hop dance class at the Student Recreation Center on the Fairbanks campus.

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Tuition and Fees

Tuition

Tuition is determined by the number of credit hours in which the student is enrolled, the level of the courses and the student's residency status (see Table 11).

- Undergraduate students are considered full time at 12 or more credits.
- Graduate students are considered full time at 9 or more credits.
- Students enrolled in no more than 4 credits per semester pay tuition at the resident rate.
- A non-resident surcharge of $388 per credit hour is charged in addition to the resident rate.

TABLE 11 **2010 – 2011 TUITION**

	Resident	Non-resident
100 – 200-level courses	$154/credit	$542/credit
300 – 400-level courses	$187/credit	$575/credit
500-level courses	varies	varies
600-level courses	$372/credit	$760/credit

Note: Audited credits are charged at the same rate as other credits.

RESIDENT AND NON-RESIDENT TUITION

Students eligible for Alaska resident tuition generally include:

- an Alaska resident, defined as a person who is a U.S. citizen or eligible noncitizen who has been physically present in Alaska for at least the past two years;
- students who received a State of Alaska Permanent Fund Dividend within the last 12 months and can certify they have been in Alaska for the past 12 months;
- military personnel on active duty, their spouses and dependent children;
- members of the National Guard, their spouses and dependent children;
- veterans of U.S. armed forces, and their dependents, who are eligible for Veteran's Administration educational benefits;
- dependent children of a person who graduated and holds an associate, bachelor's, master's or doctoral degree from the University of Alaska;
- dependent children of an Alaska resident as evidenced by the most current federal income tax return filed within the past 16 months;
- students participating in the Western Interstate Commission on Higher Education (WICHE) Western Regional Graduate Program (WRGP);
- students enrolled in four or fewer credit hours within the UA system during a semester;
- students from other states or provinces whose public universities waive non-resident tuition surcharges for Alaska residents, or who are from foreign cities and provinces with established Alaskan sister city or sister province relationships;
- students designated by the UA Scholars Program as UA Scholars;
- participants of the University of Alaska College Savings Plan;
- spouse or dependent children of a University of Alaska employee; or
- students who graduated within the past 12 months from a qualified Alaska high school.

Students will be considered non-resident if within two years prior to applying for residency they:

- were absent from Alaska for an aggregate of more than 120 days other than documented absences due to illness or attendance at another educational institution while maintaining Alaska residency;
- committed any act inconsistent with Alaska residency, such as claiming residency in another state or voting as a resident of another state;
- registered as a resident in an educational institution in another state; or
- paid tuition at the University of Alaska at the Western Undergraduate Exchange program rate.

To prove physical presence, students must provide documentation of one of the following:

- student moved household goods to Alaska at least two years ago;
- student's lease, rental or ownership of real property in Alaska for at least the prior two years;
- student's permanent employment in Alaska for at least the prior two years; or
- other documentation of Alaska residency for the two prior years deemed satisfactory by the UAF Office of Admissions and the Registrar.

Students applying for resident tuition assessment must file a residency form with the Office of Admissions and the Registrar prior to the published end of the add/drop period for regular semester-length courses for the semester for which residency is sought. Failure to file and provide adequate proof of physical presence by this date will waive any claim that the student was eligible for resident tuition assessment for that semester or prior semesters unless otherwise determined by the Office of Admissions and the Registrar.

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Residency criteria, as paraphrased above, are determined by UA Board of Regents residency policy and regulations found at www.alaska.edu/bor/policy/05-10.doc. For more information and applications, students should contact the Office of Admissions and the Registrar.

Basic Student Fees

ASUAF

Cost: $35 per semester.
Who pays: All students enrolled in 3 or more credits.
What's covered: Associated Students of the University of Alaska Fairbanks (ASUAF) represents student views and concerns to the university administration, board of regents and Alaska Legislature. The ASUAF fee also pays for publication of the UAF student newspaper, the *Sun Star*; the student-managed ASUAF Concert Board; and KSUA, the student radio and on-campus television station. Other services provided through ASUAF include a half-hour attorney consultation, ombudsman consultation, student discounts at participating businesses (the ASUAF Student Saver program), international student identification cards, subsidized student club activities and much more. Contact ASUAF at 907-474-7355 or visit www.asuaf.org.

ATHLETICS FEE

Cost: $8 per credit hour (to a maximum of $96 per semester)
Who pays: All Fairbanks area students (Fairbanks campus or Community and Technical College sites) enrolled in 3 or more credits.
What's covered: The Athletics fee provides admission to all home athletic competitions. Admission will only be guaranteed until the start of each event. Fee excludes post-season competitions. For more information regarding event/ticket policies visit www.alaskananooks.com.

COURSE FEES

Cost: Varies
Who pays: Students enrolled in courses with special fees. See the class schedule for individual classes.
What's covered: Some courses require special equipment, supplies or services and charge a materials fee in addition to tuition.

HEALTH INSURANCE

Cost: Annual: $1,164; fall semester 2011: $424; spring semester 2012: $421; spring/summer: $740; summer: $319
Who pays: Fall and spring semesters: students enrolled in 9 or more credits, students living in university housing and all international students with F-1 and J-1 visas (including Canadian students) must have health insurance coverage. If you do not already have health insurance, you must purchase the student health insurance coverage provided through the university. Departments such as the Student Health and Counseling Center, Residence Life (housing) and the Office of International Programs and Initiatives may request proof of insurance from you at any time during the semester. Insurance is optional for students enrolled in 6 – 8 credit hours.

Summer sessions: health insurance is highly recommended for all students. International students are required to have health insurance. Students enrolled in at least 6 credit hours during the summer are eligible to enroll in the university sponsored health insurance plan.

Students must actively attend classes for at least the first 31 days after the date for which coverage is purchased. Correspondence, home study, Internet and distance education courses do not fulfill the eligibility requirements that the student actively attend classes. Students taking 6 or more credit hours who do not meet eligibility requirements because they are not physically attending classes may enroll in the plan on a voluntary basis using the Distance Education enrollment form and paying the Distance Education rate. Distance Education enrollment forms are available at the Student Health and Counseling Center.
What's covered: Most accidents and acute illnesses up to a specified maximum amount per illness or injury. See www.uaf.edu/chc/student-health-insurance/ for more information.
How to pay: Insurance is not automatically charged to your account, you must add the health insurance fee to your bill during fee payment. You can also add the insurance premium on the web at http://uaonline.alaska.edu or at the Business Office in Signers' Hall.

TABLE 12 **BASIC STUDENT FEES**
(per semester unless otherwise indicated)

ASUAF	$35
Athletics Fee	$8/credit to a maximum of $96
Course Fees	varies
Health Insurance	
Semester (9 credits or more; may be waived if the student has insurance)	fall $424/spring $421 spring/summer $740
Annual (may be waived if the student has insurance)	summer $319 annual $1,164
Parking Decal	
8 credits or fewer	fall $37/spring $39
9 or more credits	fall $71/spring $74
annual permit	$130
Student Health and Counseling Center	$105
Summer semester (6 or more credits)	$66
Student Recreation Center	$75
Student Sustainability	$20
Technology	$5/credit to a maximum of $60
Transportation	
1 – 3 credits	none
4 or more credits	$13
UA Network	
2 percent of tuition	varies
Wood Center Student Life	
1 – 8 credits	none
9 or more credits	$25

All fees are subject to change.

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Waivers: International students on F-1 and J-1 visas (including Canadian students) who meet specified requirements may get a waiver signed at the Office of International Programs and Initiatives. Evidence of equivalent coverage must be presented in English and in advance of the fee payment period. Call OIP at 907-474-5327 for details.

PARKING DECAL

Cost: Fall semester: $37 for 8 credits or fewer, $71 for 9 or more credits. Spring semester: $39 for 8 credits or fewer, $74 for 9 or more credits; or $130 for an annual parking decal.
Who pays: Students who choose to park a vehicle at any UA, UAF or Community and Technical College location are required to have a parking decal or permit displayed on the vehicle at all times, including evenings. Costs are based on the combined total credit hour enrollment at UAF, CTC and Center for Distance Education, or any class held at a UAF location where credit is given through another location. (Campus residents may not purchase the multi-car user decal option. Employees are not eligible to purchase parking decals at student rates.)
What's covered: Parking in decal-required lots and general use lots/spaces at any on- or off-campus UA, UAF or CTC facility in Fairbanks.
How to order your permit: Request your permit through UAF Parking Services' online system at www.uaf.edu/parking/. The online system allows you to select the type of parking permit/s you need, your payment method and delivery option.
How to pay: Complete your permit purchase at UAF Parking Services' online system at www.uaf.edu/parking/. Payment options are MasterCard or Visa or "student account" if you have added parking to your student account. You may also add your choice of parking and pay for the permit using UAOnline (http://uaonline.alaska.edu) or at the Business Office in Signers' Hall. The permit must then be picked up at Parking Services at 803 Alumni Drive, Room 114 (Facilities Services Building).

It is the responsibility of all students parking a vehicle on UAF property (on or off campus) to be knowledgeable of UAF parking regulations, available at www.uaf.edu/parking/. For more information, call 907-474-PARK (7275), email fypark1@uaf.edu, or visit and chat online at www.uaf.edu/parking/.

STUDENT HEALTH AND COUNSELING CENTER

Cost: $105 per fall or spring semester; $66 summer
Who pays: Fall and spring semesters: students enrolled in 9 credits or more (optional for students taking 6 – 8 credit hours), students living in university housing, and all students purchasing student health insurance. Summer sessions: students enrolled in 6 credits or more (optional for students who are enrolled in less than 6 credits if they are enrolled in the upcoming fall semester for 6 or more credits and were eligible for student health center services in the preceding spring semester).
What's covered: Basic medical and counseling services at the UAF Student Health and Counseling Center on the Fairbanks campus.

Waivers: Students who meet all of the following conditions may waive the Health Center fee: 1) no courses on the Fairbanks campus or at University Park, 2) not living in university housing and 3) not purchasing the university student health insurance plan. Pick up a health center fee waiver form from the UAF Business Office on the Fairbanks campus, or call 907-474-7043.

STUDENT RECREATION CENTER

Cost: $75 per semester
Who pays: All Fairbanks area students (Fairbanks campus or Community and Technical College sites) enrolled in 9 or more credits. Students enrolled in 3 – 8 credits who want access to the Student Recreation Center and its facilities have the option of paying the fee that grants permission to use the facilities. This fee is not available for students enrolled in fewer than 3 credits. Students taking courses outside the Fairbanks area are not required to pay this fee.
What's covered: The SRC fee provides for use of the SRC and its facilities. An adult must accompany anyone under 18 using SRC facilities (unless he or she is a full-time UAF student). Contact the SRC for more information at 907-474-7205.

STUDENT SUSTAINABILITY

Cost: $20 per semester
Who pays: All Fairbanks area students (Fairbanks or Community and Technical College sites) enrolled in 3 or more credits.
What's covered: The Student Sustainability or SIREN fee is a student-initiated fee that funds energy efficiency programs and renewable energy projects or other sustainability issues. Preference is given to projects which reduce UAF's non-renewable energy consumption at the main campus and CTC sites. For more information visit www.uaf.edu/sustainability/rise/currentproposals/.

TECHNOLOGY

Cost: $5 per credit hour (to a maximum of $60 per semester)
Who pays: All students.
What's covered: The fee remains at the campus at which it was collected and is used to support technology that enhances academics.

TRANSPORTATION

Cost: $13 per semester
Who pays: All Fairbanks area students (Fairbanks or Community and Technical College sites) enrolled in 4 or more credits per semester during fall or spring semesters.
What's covered: The transportation fee pays a portion of the costs of operating shuttle buses that provide transportation throughout campus and to various university facilities off campus.

UA NETWORK FEE

Cost: 2 percent of tuition
Who pays: All students.
What's covered: The UA network charge covers rapidly rising costs, especially in the maintenance and enhancement

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TABLE 13 **OTHER FEES** (per use unless otherwise indicated)	
Application for Admission	
Occupational Endorsement, Certificate or Associate Degree	$40
Baccalaureate	$50
Graduate	$60
Application for Graduation	$50 ($80 if late)
Campus Housing	
Residence halls, per semester	$1,805 – 2,730*
Fairbanks campus family housing, per month	$750 – 1,630**
Kuskokwim campus housing	Contact campus
Credit by Examination	$40/credit
Credit for Prior Learning	$50 plus $10/credit
Duplicate Tuition/Fees Receipt	$5/copy
Graduate Student Reinstatement	$50
Late Add/Late Registration	$50
Late Payment Fees	$35; $100
Late Placement Test or Guidance Test	$5
Meal Plans, per semester	$945 – 1,975
New Student Orientation (Fairbanks area)	$75 fall $35 spring
Payment Plan	$50
Post Office Box	$45/semester
Records Duplication	$5/document
Textbooks (approximate)	$250 – 1,100/semester
Thesis Binding	$20 minimum/thesis
Transcripts	
Official (7 – 10 business days)	$7 – 15
Official (24 hour service; pick up only)	$25
Unofficial	$3

All fees are subject to change

* *Plus one-time application fee of $35 and a refundable $315 damage deposit*

** *Plus one-time application fee of $50 and a refundable $600 damage deposit*

of the university-wide technology infrastructure. The 2 percent network charge is applied on a per-credit-hour basis (rounded to the nearest dollar) to tuition, non-resident surcharges if applicable, and fees in lieu of tuition for credit and non-credit courses. The minimum network charge per course is $3.

WOOD CENTER STUDENT LIFE

Cost: $25 per semester

Who pays: All Fairbanks area students (Fairbanks campus or Community and Technical College sites) enrolled in 9 credits or more. Students taking courses outside the Fairbanks area are not required to pay the Wood Center Student Life fee.

What's covered: The Wood Center Student Life fee supports Nanook traditions such as Starvation Gulch, International Education Week, Winter Carnival and SpringFest as well as student activities and student quality of life projects.

Other Fees

APPLICATION FOR ADMISSION

Cost: $40 – $60

Who pays: Applicants to occupational endorsement, certificate and associate degree programs should include $40 with their admissions application, applicants to bachelor's programs should include $50 and applicants to graduate programs, $60.

What's covered: Assessment and processing of prospective student applications.

APPLICATION FOR GRADUATION

Cost: $50 ($80 if late)

Who pays: Students planning to graduate in a given semester must apply for graduation. Early applications are encouraged and can be submitted the semester before expected graduation. Application deadlines are Oct. 15 for fall; Feb. 15 for spring and July 15 for summer graduation.

What's covered: Credit check, degree requirement audit and certification of eligibility to graduate.

CAMPUS HOUSING

Fairbanks campus single student housing

Cost: $350 deposit ($35 nonrefundable application fee; $315 refundable damage deposit)

Double rooms	$1,805
Single rooms*	$2,220
Double room/single occupancy*	$2,730
Cutler Apts./quadruple rooms	$2,030 – $3,010

** Extremely limited availability.*

Fairbanks campus family housing

Cost: $50 nonrefundable application fee, $600 damage deposit ($300 due when you are assigned a housing unit; $300 due at check-in)

Efficiency to three-bedroom apartments: $750 – $1,630

Residence hall phone line

Cost: $120 per semester (for an optional shared land line connection in your dorm room; bring your own phone/answering machine. You are welcome to bring your own cell phone.)

How to apply: Send your completed application and application fee to the UAF Department of Residence Life. Applications are available online at www.uaf.edu/reslife/applying-for-campus-housi/. Room rent and meal plan fees, along with all other fees, are due in full by fee payment deadline. Information about Residence Life is available at 907-474-7247, housing@uaf.edu, or www.uaf.edu/reslife/.

Kuskokwim Campus housing

For information about campus housing at the Kuskokwim Campus in Bethel, visit www.bethel.uaf.edu or call 907-543-4562.

CREDIT BY EXAMINATION

Cost: $40 per credit hour

Who pays: Students using the credit-by-exam option for earning UAF course credit.

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What's covered: The fee pays for coordinating the exam or other evaluation requirements between student and professor, grade recording and transcription.

CREDIT FOR PRIOR LEARNING

Cost: $50 fee payment plus $10/credit hour for credits earned
Who pays: Students using the credit for prior learning option to earn UAF course credits.
What's covered: The fee pays for the portfolio or license/certificate review by faculty evaluation committee. If credit is awarded, the fee per credit hour earned pays for grade recording and transcription.

GRADUATE STUDENT REINSTATEMENT

Cost: $50
Who pays: Graduate students who do not meet registration requirements and fail to file an approved leave of absence may request reinstatement from the dean of the Graduate School and will be charged $50.
What's covered: Reinstatement processing.

LATE ADD/LATE REGISTRATION

Cost: $50
Who pays: Students given permission to add a class after the last day to pay tuition and fees will be charged a late fee of $50 that must be paid within five business days. This includes drop/add (swap) courses. No late fee will be charged when:

- you add a late start course during the regular registration period for that course, or
- you are moved into a class for which you were wait listed, or
- you change from one section to a different section of the same course, or
- you add a course to replace a canceled course in which you were previously enrolled.

This fee is refundable only if all classes for which you have registered are canceled. See the Registration Details "Changing your registration" section for the procedure for adding a class.
What's covered: Processing of late payments.

LATE PAYMENT FEES

Cost: $100; $35 per month for late payment plan payments
Who pays: All students who have missed the fee payment deadline and have a balance of $100 or more. An additional $100 fee will be added to accounts which are not paid by the withdrawal deadline.
What's covered: Processing of late payments.

LATE PLACEMENT TEST OR GUIDANCE TEST

Cost: $5
Who pays: Students who take a placement or guidance test outside of scheduled testing sessions.
What's covered: Test oversight, administration and recording.

MEAL PLANS

Cost: $600 – $1,975
Who pays: All residence hall students are required to purchase a meal plan, with the exception of residents living in Cutler Apartment Complex, Wickersham Hall and graduate students. Students who do not live on campus but are interested in purchasing a meal plan can contact Dining Services at 907-474-6661. Please review your dining contract for more details.
What's covered (per semester):

Platinum — Unlimited meals, including breakfasts at Wood Center Food Court and lunch and dinner at Lola Tilly Commons, and $75 Munch Money. $1,675

Gold — Unlimited meals at Lola Tilly Commons, lunch through dinner Monday through Friday, as well as brunch and dinner Saturday, Sunday and holidays, and $100 Munch Money. (Note: Breakfast may be purchased using Munch Money.) $1,655

Denali Block Meal Plan — 250 meals at Wood Center Food Court or Lola Tilly Commons and $200 Munch Money. $1,940

Nanook Block Meal Plan — 150 meals at Wood Center Food Court and Lola Tilly Commons and $500 Munch Money. $1,975

Upper Classman Block Meal Plan — 75 meals at Wood Center Food Court and Lola Tilly Commons and $100 Munch Money (availability limited, junior standing and above required).....$945

Chena Meal Plan — $1,100 in Munch Money that can be spent at any UAF dining location (limited to juniors, seniors and graduate students).....$1,100

WCC Meal Plan — $600 in Munch Money that can be spent at any UAF dining location (limited to Wickersham, Cutler and commuter students) $600

Munch Money is a declining balance account used exclusively for food purchases at any UAF campus dining location and at most vending machines. Meal plans and Munch Money can be purchased from Dining Services in 106 Eielson.
Note: Lola Tilly Commons and Wood Center Food Court are closed throughout the UAF holiday break and Spring Break.

NEW STUDENT ORIENTATION

Cost: $75 for the fall semester or $35 for the spring semester covers all programs, except special Outdoor Adventures activities.
Who Pays: Any new student may participate in UAF New Student Orientation on the Fairbanks campus. NSO is required for all first year baccalaureate degree-seeking students entering UAF with less than 30 credits. The program is also required for all EDGE students (first year residential students under 20 years of age entering with fewer than 20 credits), UA Scholars and incoming international students in undergraduate F-1 status.
What's covered: All materials, sessions, general entertainment and meals not included in student meal plans.

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PAYMENT PLAN

Cost: $50
Who pays: Students who are unable to pay all tuition and fees at the beginning of a semester.
What's covered: Budgeting by distributing the costs of tuition and fees across two or more payment dates. See www.uaf.edu/business/ for more information.

POST OFFICE BOX

Cost: $45 per box per semester
Who pays: Students who wish to receive U.S. Postal Service mail on campus may rent a post office box in the full service post office located in Constitution Hall. USPS mail is delivered on campus to post office boxes only, not to street addresses.
What's covered: Post office box space, postal and mail forwarding services.

RECORDS DUPLICATION

Cost: $0.25 per page
Who pays: Anyone who requests copies of their own academic records.
What's covered: Copies of records in your academic file in the Office of Admissions and the Registrar (except transcripts from another school). Students need to submit a written request for copies. The Office of Admissions and the Registrar provides document copies as time permits. All copies provided through this service are stamped "unofficial."

TEXTBOOKS

Cost: Varies according to course load. You can expect to pay about $250 to $1,100 per semester for textbooks. The cost for books averages about $90 – $115 per course.
Who pays: Students in classes with required texts.
What's covered: Texts, assigned readings or other course materials assigned by instructors.

THESIS BINDING

Cost: $20 minimum for each hardbound copy; other fees may be charged to cover microfilming, copyright, map pockets or postage.
Who pays: Graduate students upon completion of thesis or dissertation.
What's covered: Book binding for graduate theses and dissertations, including the two copies that are required for the UAF Rasmuson Library.

TRANSCRIPTS

Cost: $3 – $25
Official transcripts (7 – 10 business days): $7 – $15
Official transcripts (24 hour service; pick up only): $25
Unofficial transcripts: $3
Who pays: Anyone who requests their own transcripts from the Office of Admissions and the Registrar.
What's covered:

- **Official transcripts** are printed on special transcripting paper, include an official signature and the university seal, and are released in a sealed envelope. Official transcript requests are handled by the National Student Clearinghouse (www.getmytranscript.com) or by the Office of Admissions and the Registrar. Normal processing time is seven to 10 business days, but at the end of a semester and during peak registration times the process may take longer. All requests for official transcripts must be submitted online or in writing and include dates and places of attendance, social security number, date of birth, current telephone number, address and payment.
- **Unofficial transcripts** are accessible via UAOnline. Unofficial transcripts are also available from the Office of Admissions and the Registrar for $3 per copy. An unofficial transcript is printed on regular paper and released unsealed. Unofficial transcripts are available for pick up or can be mailed to the student only.

Paying Tuition and Fees

All tuition and fees must be paid by the fee payment deadline published in the semester class schedule. This includes room rent, meal plan costs, student activity fees, health fees and deposits. Any charges unpaid at the end of the previous semester are also due and must be paid before you can re-enroll. If you owe money to the university and submit an enrollment form and payment for the current semester, you will not be enrolled into your classes; the payment will be applied toward your debt. If the current semester payment is by check from a source other than the student, the payment will be returned to the source.

Other than tuition and fees, which are due according to every semester's payment schedule, any charges owed to the university are due within 30 days.

CONSEQUENCES OF NOT PAYING

You are responsible for paying all tuition and fees. The university will NOT initiate a drop for non-payment. Students must drop within the 100 percent refund period to avoid tuition and fee charges.

UAF withholds transcripts, diplomas or grades from students who have not paid all financial obligations to the institution. Registration may be withheld from any student who is delinquent in paying all charges due the university. Registration, meal plan and housing contracts may be canceled at any time by UAF for those who fail to meet installment contract payments or financial obligations.

TUITION WAIVERS

- **Senior Citizen Tuition Waiver**
  UA Board of Regents policy waives regular tuition for Alaska residents at the age of full Social Security retirement benefits. You are eligible to use the Senior Citizen Tuition Waiver and enroll in UAF courses if:
  - you are a permanent resident of Alaska;
  - you are eligible to receive full Social Security retirement benefits; and
  - there is space in the class or classes you want.

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If you are using a senior tuition waiver, you may not register until the first day of instruction for each class. You must meet both age and residency requirements by one of the following dates to be eligible for the corresponding semester: Sept. 1 for fall; Jan. 1 for spring; May 1 for summer. Reimbursements will not be made to senior citizens who pay for a course and then request a waiver.

- **Employee Tuition Waiver**
  Employee tuition waivers pay only for tuition. Tuition waiver forms must be turned in by the fee payment deadline. The employee is responsible for all other fees. The employee must be employed on the first day of instruction to be eligible. Employees who pay for a course and later become eligible for a waiver will not be reimbursed. Late fees and payment deadlines apply. More information is available at www.uaf.edu/business/.

Refunds

TUITION AND FEES

Students who withdraw from courses or cancel enrollment must submit a completed official withdrawal form to the Office of Admissions and the Registrar. UAF may fully or partially refund undergraduate, graduate and non-resident tuition and fees. The following conditions apply:

1. If UAF cancels a course, students' tuition and fees will be refunded in full.
2. If a student formally withdraws from a course, UAF will make refunds according to the date of the withdrawal.
   a. If withdrawal is prior to or on the last day of fee payment, UAF will refund 100 percent of tuition and fees. The parking decal fee will be refunded in full if the student returns the parking decal at the time of withdrawal.
   b. If withdrawal is within one week after the last day of fee payment, UAF will refund 50 percent of tuition only. The parking fee will be returned (less $5) if the student returns the parking decal at time of withdrawal.
   c. If student withdraws from a class and adds another on the same day through the third Friday of the semester, UAF will exchange tuition.
      NOTE: If the exchange is uneven — e.g., lower level to upper level, or 3 credits to 4 credits — tuition and any fees owed are due the same day.
   d. If withdrawal is after the third Friday of the semester, no refund or exchange of tuition is available.

- **Courses Meeting Four Weeks or More But Less Than a Semester**
  1. If a student withdraws within five business days of the first class meeting, UAF will refund 100 percent of tuition and fees.
  2. If a student withdraws within six to 10 business days of the first class meeting, UAF will refund 50 percent of tuition only.
  3. If a student withdraws on or after the 11th business day after the first class meeting, no refund or exchange of tuition is available.
- **Courses Meeting Less Than Four Weeks**
  If a student withdraws before the first day of class, UAF will refund 100 percent of tuition and fees. No refund or exchange of tuition is available to students who withdraw on or after the first day of class.

REFUND PROCESSING TIMELINE

1. The date the drop/withdraw is processed by the Office of Admissions and the Registrar determines eligibility for a refund.
2. For evening or weekend classes, the drop must be processed the next working day for the refund to apply.
3. A student whose registration is canceled as a result of disciplinary action forfeits all rights to a refund of any portion of tuition and fees.
4. If a student's registration is canceled by a faculty-initiated drop/withdraw, the refund will be based on the date of the drop/withdraw and the policy described.
5. If fees are paid by check, any refund to which a student may be entitled will be processed after the check has cleared the bank.
6. If a student owes a debt to the university, any credits resulting from the drop/withdraw will be applied to that debt.
7. Students who receive any type of external funding, including financial aid, may have their refunds applied to the external funding source. In the case of financial aid, the refund will be applied according to federal regulations.
8. Vocational/technical course fees are subject to this refund schedule.
9. Summer Sessions refund policy is separate and is found in the Summer Sessions catalog.
10. 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.

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EXCEPTION TO POLICY: APPEAL FOR REFUND OF TUITION

Appeals for refund of tuition are exceptions to policy and are only allowed in exceptional cases. Approval is not automatic, and you need to provide documented evidence to support your request. Acceptable serious and compelling reasons may include: 1) death in immediate family; 2) serious illness or injury of student or immediate family; and 3) factors outside of student's control (for example, major employment change, fire, flood). Failure to comply with published deadlines or regulations is not a serious and compelling reason to seek a refund and will not be approved.

Appeals for refund of tuition must be submitted within 30 class days after the beginning of the next regular semester. Forms for an appeal for refund of tuition are available online at www.uaf.edu/business/forms/, through the Business Office in Signers' Hall at the Fairbanks campus or at CTC. Once received, the appeal will be evaluated by a campus-wide committee which will return a decision to the student. The decision of the committee is final and a student who files a written appeal under these procedures shall be expected to abide by the final disposition of the review, as provided, and may not seek further appeal of the matter under any other procedure within the university. Submission of appeals and appropriate documentation after published deadlines will not be considered. Contact the Business Office for more information.

HOUSING

Students who move off campus or withdraw from the university will receive room refunds according to the schedule on page 60.

Any refund of room charges will be based upon the days remaining in the semester. A $75 service charge will be subtracted from each refund of meal plan charges, regardless of the date of withdrawal. No refunds are available after the 12th week of the semester.

MEALS

Please refer to your board plan agreement for specific information about meal plan refunds.

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www.alaska.edu/titleIXcompliance/nondiscrimination.

Financial Aid

What is Financial Aid

Most students will need financial aid to help pay for the cost of attending college. Financial aid in the form of scholarships, grants, loans and employment is available at the University of Alaska Fairbanks to eligible students who need assistance to attend school.

Financial aid can be used to help pay for tuition, fees, books, supplies and living expenses such as room and board. The financial aid office provides counseling and information services to students and parents and administers a comprehensive program of financial assistance. Specific information regarding financial aid programs at UAF can be found online at www.uaf.edu/finaid/. The financial aid office is located in 101 Eielson. We can be reached by phone at 907-474-7256, toll-free at 888-474-7256, or via email at financialaid@uaf.edu.

Who Receives Financial Aid

To receive financial aid you must:

1. Be admitted to a financial aid-eligible certificate or degree program at UAF;
2. Be a U.S. citizen or eligible non-citizen (F-1 and J-1 students are not eligible for state or federal financial aid, but may apply for University of Alaska Foundation or UAF privately funded scholarships, and graduate fellowships or assistantships.);
3. Be registered with Selective Service if you are a male 18 or more years old;
4. Have a valid social security number;
5. Be making satisfactory academic progress as defined by the financial aid office policy (policies and forms can be found online at www.uaf.edu/finaid/);
6. Not be in default on any federal education loan and not owe a refund because of overpayment of a previous federal grant or loan at any college or university;
7. Receive passing scores on the ACCUPLACER, ASSET or COMPASS tests if you don't have a high school diploma or equivalent and weren't home schooled. Passing ACCUPLACER scores are: arithmetic: 34 or higher; reading comprehension: 55 or higher; sentence skills: 60 or higher. Passing ASSET scores are: numerical skills: 33 or higher; reading skills: 35 or higher; writing skills: 35 or higher. Passing COMPASS scores are: pre-algebra: 25 or higher; reading: 62 or higher; writing skills: 32 or higher. See Table 14 for ability to benefit policy and cutoff scores.

TABLE 14 **ABILITY-TO-BENEFIT**

APPROVED ABILITY-TO-BENEFIT TESTS*	ABILITY-TO-BENEFIT (ATB) APPROVAL	
	Ability-to-Benefit (ATB) Yes**	Ability-to-Benefit (ATB) No
COMPASS Writing Skills	32+	0 – 31
COMPASS Reading Skills	62+	0 – 61
COMPASS PreAlgebra	25+	0 – 24
ACCUPLACER Sentence Skills	60+	0 – 59
ACCUPLACER Reading Comprehension	55+	0 – 54
ACCUPLACER Arithmetic	34+	0 – 33
ASSET Form B2, C2, D2, E2 Writing Skills	35+	23 – 34
ASSET Form B2, C2. D2, E2 Reading Skills	35+	23 – 34
ASSET Form B2, C2, D2, E2 Numerical Skills	33+	23 – 32

* *ATB scores correspond to the Department of Education ability-to-benefit test cutoff score. These are important requirements for federal financial aid for students who do not have a high school diploma or GED. Please contact UAF Financial Aid at 907-474-7256, financialaid@uaf.edu or visit* www.uaf.edu/finaid/ *for more information.*

** *All applicants must meet or exceed the minimum scores in each of the three approved areas (reading, English and math) in a single testing experience*

How to Apply for Financial Aid

The forms needed to apply for federal, state and UAF financial aid programs are available at the UAF Financial Aid Office or on our website www.uaf.edu/finaid/.

All students must complete the Free Application for Federal Student Aid (FAFSA) to be considered for grants, scholarships, tuition waivers, loans and work study.

FAFSA forms may be completed online at www.fafsa.ed.gov. The earliest date students may begin completing the form is Jan. 1.

The priority application deadline for UAF is Feb. 15. If you miss the deadline, you may still apply for financial aid, but you might not be eligible for institutional scholarships or some state/federal grants.

Remember to apply for a PIN (Personal Identification Number) at www.pin.ed.gov, which you will use to electronically access and sign your FAFSA. Parents of dependent students will also need a PIN.

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Costs of Attending UAF

The information in Table 15 for a typical full-time undergraduate student for the school year is provided to help students estimate the total cost of attending UAF:

TABLE 15 **ESTIMATED UAF LIVING EXPENSES**

	Single student living alone off campus	Single student living in UAF residence hall
Tuition and fees*	$5,570	$5,570
Books, supplies	$1,400	$1,400
Room and board**	$10,250	$6,960
Transportation	$2,000	$ 400
Misc./personal	$2,250	$2,250
TOTAL	$21,740	$16,580

* *Estimate includes Alaska resident tuition costs for freshmen/sophomores. Includes Wood Center student life, student government, technology, transportation, UA network, athletics, Student Recreation Center and health center fees. Does not include health insurance, parking, sustainability, travel or special costs associated with international or exchange students. Add $11,640 for non-resident tuition. Costs are subject to change.*

** *Double room and 19 meals per week*

Standard budgets do not always fit everyone. The financial aid office will try to provide methods of covering unusual expenses such as medical bills, special child care or emergency items. Since eligibility is based on prior year income, you may request a review of your eligibility if your income changes from loss of job, divorce, death or disability.

How Eligibility is Determined

Within two to four weeks after the FAFSA is filed, the financial aid office will receive a student aid report from the U.S. Department of Education. The information on this form is used to determine a student's eligibility for financial aid at UAF.

Once our office has received this report, students will receive an email from our office either requesting more information (such as copies of income tax forms, proof of citizenship, etc.) or an award notice detailing your eligibility for financial aid. This information is also available via UAOnline at http://uaonline.alaska.edu. Students should respond to requests for more information promptly in order to avoid delays.

The total amount of financial aid awarded will be based on the FAFSA results and the student's cost of attendance.

Scholarships, Grants and Tuition Waivers

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

- **University of Alaska Scholars Program**
  UA Scholars are exceptional graduates of Alaska high schools who are offered a unique opportunity to attend the University of Alaska with an $11,000 scholarship paid over eight semesters at $1,375/semester. The UA Scholars Program encourages Alaska's high school graduates to pursue their advanced education in the 49th state. Alaska high schools designate the top 10 percent of the junior class at the end of their junior year for the UA Scholars Award. UA Scholars may use their awards at any of the UA system campuses. The award may also be applied to costs of qualified student exchange programs. Contact the UA Scholars coordinator at the Office of Admissions and the Registrar at 907-474-7500 or 800-478-1823.
- **Chancellor's Scholarship**
  This award is available to high school students transitioning to college for the first time. A UAF application for admission, including the scholarship supplement form that is part of the application, must be received by Feb. 15 to be considered for this award. You may apply online at http://uaonline.alaska.edu. For more information contact the Office of Admissions and the Registrar at 907-474-7500 or 800-478-1823.
- **Alaska Performance Scholarship**
  The Alaska Performance Scholarship is available to Alaska residents who graduate from an Alaska high school (public, private or home school) in 2011 or later. Students must complete high school, achieve a high school GPA of at least 2.5, earn a minimum score on college or career readiness test, enroll at least half time, remain in good standing and have qualifying education costs remaining after using all other non-loan aid. Students can receive up to eight semesters of award with three maximum annual award levels: up to $4,755, $3,566 and $2,378. To qualify, students must complete the FAFSA as soon as possible. For more information visit www.APS.alaska.gov or call 800-441-2962.
- **Human Achievement Award**
  This service award is given to graduating high school seniors and transfer students who demonstrate a record of volunteerism, community service and a commitment to high academic standards. A UAF application for admission, including the scholarship supplement form that is part of the application, must be received by Feb. 15 to be considered for this award. You may apply online at http://uaonline.alaska.edu. For more information contact the Office of Admissions and the Registrar at 907-474-7500 or 800-478-1823.
- **Talent Grant Award**
  Awards are for graduating high school or transfer students who have demonstrated talent in music, theater, creative writing or art. A UAF application for admission, including the scholarship supplement form that is part of the application and a sample or portfolio, must be received by Feb. 15 to be considered for this award. You may apply online at www.uaf.edu/admissions/ or

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at http://uaonline.alaska.edu. For more information contact the Office of Admissions and the Registrar at 907-474-7500 or 800-478-1823.

- **UAF Privately Funded Scholarships**
  Several hundred privately funded scholarships are available to all prospective and current students in a variety of academic majors. A UAF application for admission, including the scholarship supplement form that is part of the application, must be received by Feb. 15 to be considered for most scholarships. Continuing students must complete the scholarship supplement form only. You may apply online at http://uaonline.alaska.edu. For more information contact the Office of Financial Aid at 907-474-5372 or 888-474-7256.
- **University of Alaska Foundation Scholarships**
  Scholarships are available for students attending any campus in the UA system. Applications are available in the UAF financial aid office or at the UA Foundation Office, 206 Butrovich Building. The deadline is Feb.15. For information telephone 907-474-7687, email sdfnd@alaska.edu, or visit www.alaska.edu/foundation/.
- **Army ROTC Scholarships**
  The U.S. Army awards four-year scholarships to high school students each year based on nationwide competitions. Students may use these scholarships to attend the university of their choice provided that university is also host to an Army ROTC program. The UAF Army ROTC program supports campus-based competition for four-, three- and two-year scholarships for qualified UAF students. These scholarships may be used for undergraduate or graduate programs. Army ROTC scholarships pay UAF tuition and mandatory fees, $900 annually for books and supplies, and provide a monthly stipend for living expenses ranging from $300 to $500 depending on the length of the scholarship.

  For more information about the Army scholarship program, eligibility requirements and the application process, contact the Department of Military Science at 907-474-6852 or email rotc@uaf.edu.
- **Bureau of Indian Affairs (BIA) and Native Corporation Scholarships**
  The federal Bureau of Indian Affairs offers grants to undergraduate full-time students. Applicants must be at least one-quarter American Indian or Alaska Native. These grants supplement other financial aid and are based on financial need. 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, or by telephone at 907-271-4115.

  Some regional and village corporations provide scholarships to shareholders. Contact your local corporation for details on eligibility and application procedures.
- **University of Alaska Grant**
  This need-based tuition assistance grant is awarded to eligible students who have completed fewer than 60 credits toward an undergraduate degree. Applicants must complete the Free Application for Federal Student Aid (FAFSA) by April 15, be an Alaska resident, admitted to a degree program, enrolled in at least 6 credits and maintaining satisfactory academic progress. Award amounts vary and are capped at a maximum of $1,000.
- **Pell Grant**
  The federal Pell Grant is a need-based grant available to undergraduate students to help pay college costs. Since this grant is based on financial need, students must complete the Free Application for Federal Student Aid (FAFSA). A federal processor will send applicants a Student Aid Report (SAR) indicating whether they qualify. Federal Pell Grants award up to $5,550 for the 2011 – 2012 academic year.
- **Federal Supplemental Educational Opportunity Grant**
  This grant is for exceptionally needy undergraduate students. Award amounts range from $600 to $1,000 each year.
- **Student Support Services Program (SSSP) Grants**
  Student Support Services offers grant aid to qualified program participants who have made use of the SSS academic support services and are receiving Pell Grant funds. To be eligible to participate, you must be a first generation college student (neither parent has a college degree), have a documented learning or physical disability, or qualify as a low income student. Visit www.uaf.edu/sssp/ for more information.
- **AlaskAdvantage Grant**
  The AlaskAdvantage need-based grant is awarded to Alaska residents attending Alaska institutions. Priority is given to students pursuing degrees in Alaska workforce priority programs (such as allied health, social and community services, or teaching) or who have an ACT score of 25 or higher or SAT score of 1180 or higher. Part-time awards range from $500 to $1,000 per academic year. Full-time awards range from $1,000 to $2,000 per academic year.
- **Western Undergraduate Exchange Award**
  UAF participates in the Western Undergraduate Exchange (WUE) administered by the Western Interstate Commission for Higher Education (WICHE). Only new undergraduate degree applicants claiming residency in Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, South Dakota, Utah, Washington or Wyoming are considered for a WUE award that reduces non-resident tuition to 1.5 times the resident tuition rate. WUE award applicants must submit an application for admission and clearly mark their interest in WUE on the form. Admission is restricted to an approved list of degree programs. Priority deadline for reviewing

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WUE applications is Feb. 15. For more information contact the Office of Admissions and the Registrar at 800-478-1823 or 907-474-7500, or online at www.uaf.edu/admissions/.

Note: Students attending any campus of the University of Alaska system under the Western Undergraduate Exchange (WUE) program are assumed to be receiving the benefit of reduced tuition because of their residency in a partner state. Therefore, time spent in WUE does not count toward the time required to establish residency in Alaska for tuition purposes. If students end their participation in WUE, they could begin establishing residency for tuition purposes as set forth in the resident and non-resident tuition policy on page 54.

Graduate Assistantships

You must be admitted to a graduate program to receive an assistantship. Research and teaching assistantships are awarded to qualified graduate students by each department or program. For application information, contact the department or program directly. For more information, see How to Earn a Graduate Degree, page 198.

Fellowships are available through the University of Alaska Foundation, the Graduate School and private organizations. A limited number of these awards are granted each year, and the amounts vary. For information, contact the UA Foundation, 907-474-7687 or the Graduate School, 907-474-7464, or visit online at www.uaf.edu/gradsch/.

Loans

Loans represent a major source of assistance as you try to meet the full costs of your education. Educational loans generally have long-term repayment schedules and offer low interest rates. They often have provisions for deferring payments and may offer more benefits related to financial need.

Any student who borrows money for college should understand the specific conditions and requirements regarding disbursements, deferments and repayment options. Students who fail to meet the conditions of the satisfactory academic progress policy may be denied all federal aid.

UAF participates in the Federal Student Loan Program. The Federal Stafford Loan provides loans from a lender such as a bank through a guarantee agency and UAF. The program offers subsidized and unsubsidized loans. Subsidized loans are for students who have financial need; the government makes interest payments on the loan while the student is in school, in grace period or in deferment. Unsubsidized loans are those for which the student is responsible for interest payments even while in school.

Table 16 below outlines estimated monthly payments over a 10-year repayment period. Loan repayment calculations are available at www.finaid.org.

TABLE 16 **STUDENT LOAN REPAYMENT SCHEDULE**

Total Loan	Monthly Payments	8.25 Percent Interest	Total Repayment
$ 5,000	$ 61	$2,359	$ 7,359
$10,000	$123	$4,718	$14,718
$15,000	$184	$7,098	$23,078
$20,000	$233	$8,965	$28,965
$25,000	$307	$11,796	$36,796

Students must be enrolled in at least 6 credits to qualify for a state or federal loan. Yearly limits for dependent students are $3,500 for first-year students, $4,500 for second-year students and $5,500 for upper-level undergraduates. Independent students may borrow, including the subsidized federal loan, up to $7,500 as first-year students, $8,500 as second-year students and $10,500 as third- or fourth-year students. Graduate students may borrow $20,500, of which $8,500 can be a subsidized loan. The interest rate varies annually and is capped at 8.25 percent.

The Federal Parent Loan for Undergraduate Students (PLUS) is a program for parents of dependent students. The cost of attending UAF determines the annual loan limits. A variable interest rate or finance charge, not to exceed 9 percent, is determined each year for the federal PLUS programs.

The Alaska Commission on Postsecondary Education (ACPE) offers both federal and state loan programs. These loans are available to all students attending UAF. Through its federal component, AlaskAdvantage offers Stafford (subsidized and unsubsidized) and PLUS loans. State loans include the Alaska Supplemental Education Loan (ASEL), the Family Education Loan, the Teacher Scholarship Loan, and the Winn Brindle Scholarship Loan.

Students seeking an Alaska Supplemental Education Loan (ASEL) must apply using the Free Application for Federal Student Aid (FAFSA) and the ASEL Master Promissory Note.

The ASEL loan can be used as a supplement to any other aid, provided the total amount of aid does not exceed a student's calculated cost of attendance. ASEL approval also requires a student to have good credit. Undergraduates may borrow up to $8,500, and graduate students up to $9,500. Repayment begins no later than six months after the borrower stops attending school at least half time. The interest rate is variable and is made public every July. Interest is charged from the day of disbursement.

The Alaska Family Education Loan Program allows the student's family to share the cost of the student's education. A family member can borrow up to $8,500 for an undergraduate and up to $9,500 for a graduate student. The interest rate is 5 percent and the borrower begins repayment within 60 days of the final disbursement.

The Teacher Scholarship and Winn Brindle Scholarship loans can be used only for specific fields of study. For information on these two programs, please contact the

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Alaska Commission on Postsecondary Education (ACPE), 3030 Vintage Boulevard, Juneau, Alaska 99801, telephone 800-441-2962, or visit online at www.state.ak.us/acpe/.

Applicants must apply each year and applications are available for all Alaska loan programs via the ACPE website or through their offices. UAF receives ACPE loan disbursements via electronic funds transfer (EFT). Loans are processed within 7–10 days from time of receipt at ACPE offices in Juneau or Anchorage and can be disbursed to a student's UAF account within two days of receipt by the financial aid office.

Advance of funding (previously known as a textbook loan) may be available to students with enough certified financial aid available to cover all semester expenses and the requested advance of funding. Financial aid must be verified and guaranteed before an advance will be issued. In order to obtain an advance of funding, applicants must provide a textbook list, verified financial aid and a completed and signed advance of funding form. A $10 service charge is assessed and due when the advance of funding form is submitted. Applications and more information are available at the UAF Business Office.

Student Employment

Campus jobs help many UAF students pay college costs. Many student positions are available across UAF campuses, as well as the University of Alaska statewide system offices in Fairbanks; more than 1,000 students are employed in these jobs. Full-time student status is not required unless specified by a department. However, students who are less than full time are subject to FICA withholding, and departments that hire part-time student employees are subject to the applicable benefit rate charge.

Student employees may work up to 20 hours each week while classes are in session and up to 40 hours when classes are not in session. Pay rates are based on the job classification. The average pay varies from $300 to $500 each month. Since there is no "pool" for workers, students apply directly to the departments with position vacancies. Job announcements and information on how to apply for positions are available from Career Services, 110 Eielson, 907-474-7596, or from Human Resources, Administrative Services Center, 907-474-7700, or at www.uakjobs.com.

The Federal Work Study program provides jobs for graduate and undergraduate students with financial need. Job placement and working conditions are similar to regular student employment. To qualify for FWS, students must be eligible for federal financial aid as determined based on information provided on the required FAFSA form.

Veterans' Services

The UAF Financial Aid and Veterans' Services Office advises and monitors the educational progress and status of veterans who attend UAF using VA educational benefits. They also assist veterans, service members and eligible dependents with the paperwork needed to begin and continue certification under the various GI Bill benefits. If you qualify and wish to use your benefits, you must be fully admitted to UAF and in a state-approved degree or certificate program. A complete list of benefit programs is available at www.uaf.edu/veterans/benefit_programs/. If you are unsure whether you are entitled to GI Bill benefits, contact the Department of Veteran Affairs in Muskogee, Okla., at 888-442-4551 (1-888 GI BILL 1) or online at www.gibill.va.gov.

Specific questions regarding Vocational Rehabilitation should be directed to the local Veterans' Center, 540 Fourth Avenue, Suite 100, Fairbanks, Alaska 99701, or call 907-456-4238.

Because the Department of Veterans' Affairs processes benefit payments as a reimbursement, you should initiate your VA paperwork 60 – 90 days before your classes start. You can apply for veteran benefits online at https://vabenefits.vba.va.gov/vonapp/main.asp. You can request certification for your UAF VA educational benefits at www.uaf.edu/veterans/apply/, or visit our office at 107 Eielson, call 907-474-6391, toll-free at 888-474-7256 or email financialaid@uaf.edu.

Remaining Eligible for Aid

Students receiving financial aid are required to maintain satisfactory academic progress. Undergraduate students must satisfactorily complete a minimum of 75 percent of total credits attempted each year and have a cumulative grade point average of 2.00 (3.00 for graduate students).

Students may appeal the suspension of aid. Appeals must be in writing and must state the reasons for failure to maintain satisfactory standards of progress, as well as the steps the student will take to meet those standards in the future. Appeals should be directed to the financial aid office, which will determine if the requirements for satisfactory academic progress will be waived. Academic progress requirements are subject to changes in federal or state law and institutional policy. A complete description is available at the financial aid office or at www.uaf.edu/finaid/.

Payment to the Student

Disbursement of financial aid is usually in equal amounts. Students are given one-half of the total award at the beginning of each semester. Tuition, fees and all other amounts due to UAF at the time financial aid is released to the student must be paid before the balance of aid is released to the student.

All financial aid checks as well as checks from outside organizations (such as Native corporations, clubs, etc.) are initially credited to the student's account to pay for any debt owed to the university. Any balance remaining is refunded to

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the student in accordance with the university's refund policy.

Students who receive federal financial aid and totally withdraw from classes during a semester may have to pay back a portion of the federal financial aid received for that semester. The amount to be repaid is based on the number of class days attended before withdrawal compared to the total days in the semester and amount of federal aid received. If the withdrawing student is entitled to a refund of tuition and fee charges, all or part of the refund may be returned to the federal financial aid programs. The amount of a refund, repayment or return of federal financial aid is based on U.S. Department of Education regulations concerning return of federal financial aid. Any refund or repayment calculation exceeding the amount of refund determined by university policy will be charged to the student. Financial aid recipients are strongly encouraged to confirm the amount of any personal liability before processing a total withdrawal from classes.

Important Financial Aid Dates

- **Jan. 1**
  Apply for federal aid with the Free Application for Federal Financial Aid (FAFSA). It is best to apply well before the time you will need the financial aid.
- **February**
  Apply for admission to UAF. Financial aid cannot be processed for students who have not been admitted to a UAF degree or certificate program.
- **Feb. 15**
  UAF scholarship application due. This application usually requires two to three weeks to complete, so applicants should start early.
- **May to August**
  Complete and mail the Alaska Supplemental Education Loan Application to Juneau or Anchorage or apply online at www.state.ak.us/acpe/.
- **May to July**
  Submit federal loan applications to UAF financial aid office or apply online at www.uaf.edu/finaid/. Processing time is three to four weeks. If sent to UAF in time, loans will be disbursed during fee payment.
- **June 1 for fall; Oct. 15 for spring**
  Deadline for admission to graduate programs, with all supporting documentation, transcripts and test scores.
- **July 1**
  Deadline for undergraduate admission to UAF for the fall semester. This is an absolute MUST. UAF cannot process financial aid for students who have not been admitted.

Rights and Responsibilities of Accepting Financial Aid

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

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

For continued receipt of financial aid you must:

1. Complete and file all financial aid forms accurately and on time.
2. Read and understand all documents you sign. You should also keep copies for your records.
3. Know the limits and conditions of financial aid programs.
4. Notify the financial aid office of any change of address, name, marital status, attendance status or receipt of additional financial awards.

Where to Get More Information

Office of Financial Aid
University of Alaska Fairbanks
101 Eielson Building
P.O. Box 756360
Fairbanks, AK 99775-6360
Email: financialaid@uaf.edu
Online: www.uaf.edu/finaid/
Telephone: 907-474-7256
Toll-free: 888-474-7256

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HOUSING

Housing *and* Dining

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Resident advisor Ashleigh Strange hangs out in her Cutler Complex apartment.

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Housing

Single Student Housing

Your educational experience at UAF will be one of the great adventures of your life. The UAF Department of Residence Life can be a vital part of that adventure through programs designed to offer you a comfortable, energetic environment in which to live and learn. The community will foster close friendships and academic achievement, help you develop individual leadership ability and will provide opportunities for personal growth.

UAF's residence halls are some of the best in the state, and they are the only residence halls in the nation that boast a view of the Alaska Range and Denali (Mount McKinley), the highest peak in North America.

Residence Life offers living environments to meet every need. Options include coed buildings by floor, coed buildings by suites, small community atmospheres for rural Alaskans, apartment-style options, single rooms, alcohol-free environments and first-year experience halls. All residential units are pet and smoke free.

Residence hall students have the conveniences of home within walking distance to class. Benefits include:

- 74-channel cable television service
- optional local telephone service
- wireless and high-speed Ethernet connections
- laundry facilities on site
- trained staff on call (24 hours)
- more than 400 programs offered each year

ELIGIBILITY

All UAF students are eligible for campus housing, but students are not guaranteed housing until approved by the Department of Residence Life. To better manage occupancy, Residence Life may establish occupancy priorities and eligibility/credit hour requirements.

APPLICATION PROCESS

Applications are available through admissions upon admittance to UAF, through Residence Life upon request or online at www.uaf.edu/reslife/applying-for-campus-housi/. Applicants must send $350 ($315 deposit, $35 non-refundable application fee) with the signed housing application. Upon acceptance, Residence Life will return a written confirmation and receipt to the student.

COSTS

On-campus costs are comparable to off-campus living costs. When amenities such as cable television, wireless and Ethernet computer connections, transportation and laundry facilities are added in, the on-campus costs are even more favorable. Residential fees (room and board) are due in full at fee payment along with all other fees.

Residence hall and board plan fees are listed on page 57. All room and board costs are subject to change. Students whose housing applications have been accepted will be given the opportunity to withdraw (less application fee) if rates increase after they apply. Contact Residence Life about residence hall fees. Questions about the board plan can be directed to UAF Dining Services at 907-474-6661.

CONSEQUENCES OF CANCELING A HOUSING CONTRACT

After July 31, students who have submitted a housing application are expected to live on campus and pay appropriate housing fees for their reserved space. Students who fail to occupy their reserved space by the first day of classes or cancel their reserved space after July 31 will be assessed a minimum of 10 percent of the room rate and forfeit their deposit. Dining plans also carry cancellation consequences. Direct questions to UAF Dining Services at 907-474-6661.

On-campus housing applications are for the academic year. Students living on campus for the fall semester are obligated to live on campus for the remainder of the academic year, so long as they are UAF students. Exceptions may be granted for the conditions listed under the "termination/forfeits" section of the agreement.

Room charges and refunds are processed according to the following schedule:

TABLE 17 **ROOM REFUND SCHEDULE**

Withdrawal Period	Refund Amount
Aug. 1 through class day 7	90 percent of semester housing charge
Class days 8 – 12	75 percent of semester housing charge
Class days 13 – 27	50 percent of semester housing charge
Class days 28 – 42	25 percent of semester housing charge
Beyond 42 class days	No refund will be issued

Deposits will be carried forward to subsequent academic years for students with applications. Deposits can be forfeited for several reasons. Please refer to the back of the residence hall application for specific details.

HALLS AND ROOMS

Every residence hall has common areas — including recreation lounges, study lounges, small kitchens and laundry facilities — designed to foster academic and personal growth. Recreational lounges typically have televisions, couches, tables, chairs and pool tables or ping-pong tables. Hall kitchens generally include a range/oven, refrigerator, microwave, sink, table and chairs. Kitchens are for preparing snacks and not designed to replace the university meal plan.

All student rooms have high-speed Ethernet connections, local telephone service and cable television service. Students must furnish their own twin-long linens, blankets, pillows, towels and telephone. Custodial service is provided for all common areas such as hallways, lounges and centrally located bathrooms.

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EDGE PROGRAM

The Education, Development, Growth and Experience (EDGE) program provides support and resources to help traditional first-time freshmen achieve academic success. The EDGE program is mandatory for all first-time freshmen under 20 years of age and who live on campus. EDGE halls have live-in tutors and twice the number of resident advisors as other halls. Alcohol is prohibited in the EDGE halls. Participants receive instruction in academic success skills, campus resources and other topics that foster success.

ROOM USE DURING VACATION PERIODS

All halls are open during Thanksgiving and spring break, but most are closed during the winter break with the exception of Cutler Apartments. All students living on campus in the fall and spring are eligible to remain on campus over the winter break provided they apply and pay the winter break fee. The winter break fee for Cutler Apartments is included in the fall semester rates. Food service is not available during the winter and spring breaks. Summer housing assignments are made through Residence Life.

Family Housing/Graduate Housing

UAF offers a variety of on-campus housing to meet the needs of student families. The university owns and maintains 180 furnished apartments on campus, ranging from one- to three-bedroom units. They are affordable, comfortable and conveniently located near the center of campus. All apartments are smoke- and pet-free.

ELIGIBILITY

Students who are married and accompanied by their spouse, single parents with legal custody of their children, financially interdependent domestic partners and graduate students are eligible for family/graduate housing options at UAF. At least one adult family member must be enrolled as a full-time UAF student. Students planning to be married by the time they move in may apply. However, students may not sign an occupancy agreement until they present a marriage certificate or obtain financial interdependence approval.

APPLICATION PROCESS

Residence Life will mail an application for family housing upon request (also available online at www.uaf.edu/reslife/applying-for-campus-housi/). Applicants should return the completed form as soon as possible with a non-refundable $50 application fee. Residence Life establishes waiting lists according to the order in which it receives applications. The application is not a guarantee of accommodations, but it gives Residence Life the information it requires to meet the applicant's needs. All apartment preferences are honored on a first-received, first-served basis. Three-bedroom units are often in high demand.

COSTS

Costs for families living on campus are comparable to the costs of living off campus. On-campus family apartment rental rates include all utilities except telephone and Internet in some units.

Deposits for family housing are $600. Upon acceptance of your assigned apartment, $300 of the deposit is due. The balance of your $600 deposit and your first month's rent is due when you check in. Your occupancy agreement is for the entire academic year, but you may cancel the agreement for spring semester without forfeiting your deposit if you graduate or are not enrolled at UAF. Cancellation requests must be submitted in writing to Residence Life with a 30-day notice of intent to vacate, completing checkout no later than Jan. 3. See the cancellation/termination section of your agreement.

APARTMENTS

The Fairbanks campus maintains five apartment complexes: Stuart Hall and Walsh Hall offer one-bedroom apartments (400 square feet) for couples without children; Hess Village offers one-bedroom (425 square feet), two-bedroom (720 square feet), and three-bedroom (900 square feet) apartments for families with children; and Garden Apartments is a six-plex offering shared two-bedroom apartments. Harwood Hall offers efficiencies (380 square feet) and one-bedroom apartments (470 square feet) for graduate couples without children and single graduate students. All complexes are equipped with laundry facilities.

Campus apartments are fully furnished and usually include Ethernet computer connections, cable television service, laundry facilities and local telephone service.

Immunization Policy and Housing

The University of Alaska strictly enforces immunization and test requirements for students living in high-density housing. To be eligible to live in residence halls and single-student apartment complexes, all students and other persons born after 1956 must complete, sign and submit a health inventory form to the Student Health and Counseling Center. The form must show:

1. Proof of immunization against or immunity for measles, mumps, rubella (two MMR are required).
2. Proof of immunization against diphtheria and tetanus (within the past 10 years).
3. PPD screening for tuberculosis (within the past year). If your screening was positive, you must provide evidence of a negative chest X-ray.

Although the university urges all students to be immunized against communicable diseases, these requirements are specifically intended to help ensure the health of all resident students.

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MANDATORY IMMUNIZATIONS AND TESTS

Your application for housing may be withheld for your second semester if you have not submitted these items. The university may require additional or expanded immunization and testing if the university community's health and safety warrants it.

The university may grant exemptions from immunization requirements based on medical or religious reasons. The chancellor may also grant exemptions to people who will occupy student residence facilities for less than a semester. Those exempted from immunization or testing for a disease may be removed from student residence facilities should an outbreak of that disease occur or threaten to occur. Residence Life cannot authorize exceptions to this policy.

See Board of Regents' Policy, Part IX–Student Affairs, Chapter XI–Student Health. For more information, contact the Student Health and Counseling Center, telephone 907-474-7043, email uaf-sh-cc@alaska.edu, or online at www.uaf.edu/chc/.

Where to Get More Information

Department of Residence Life
University of Alaska Fairbanks
Main Floor, Moore-Bartlett-Skarland Complex
P.O. Box 756860
Fairbanks, Alaska 99775-6860
Email: housing@uaf.edu
Online: www.uaf.edu/reslife/
Telephone: 907-474-7247
Fax: 907-474-6423

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Dining Services

The UAF Dining Experience

UAF offers many different meal plans for Fairbanks residential and commuter students. Students can choose from plans ranging from 75 meals per semester to an unlimited number of meals per semester. Breakfast is served at Wood Center Food Court, while lunch and dinner, as well as brunch on the weekend, is served at Lola Tilly Commons.

Meals are served "all you care to eat" style. Options at Lola Tilly Commons include a large salad bar, soup station, pasta station, pizza station, grilled items and daily specials, sandwich bar, vegan and vegetarian dishes, and an ice cream and dessert station. Lola Tilly Commons is located on lower campus in front of McIntosh, Nerland, and Stevens halls. The commons is closed during the winter and spring breaks.

Please review your dining contract for more details.

MEAL PLANS

- **The Platinum Meal Plan**: This plan entitles you to an unlimited number of all you care to eat meals for breakfast at Wood Center and lunch and dinner at Lola Tilly Commons. It also includes $75 in Munch Money which may be used in all UAF dining services locations campus-wide. This plan does not include guest privileges. $1,675/semester
- **The Gold Meal Plan**: This plan entitles you to an unlimited number of all you care to eat meals (lunch through dinner only) at Lola Tilly Commons where meals are served Monday – Sunday. This plan includes $100 in Munch Money which may be used in all UAF dining services locations campus-wide. This plan does not include guest privileges. (Note: Breakfast may be purchased using Munch Money). $1,655/semester
- **The Denali Block Meal Plan**: This plan entitles you to 250 meals and $200 Munch Money. Meals can be used for breakfast at Wood Center Grill 155 and lunch and dinner at Lola Tilly. Block meals can be exchanged for $5 per meal at any dining retail location on campus (excluding Subway). $1,940/semester
- **The Nanook Block Meal Plan**: This plan entitles you to 150 meals and $500 Munch Money. Meals can be used for breakfast at Wood Center Grill 155 and lunch and dinner at Lola Tilly. Block meals can be exchanged for $5 per meal at any dining retail location on campus (excluding Subway). $1,975/semester
- **The Upper Classman Block Meal Plan**: This plan entitles you to 75 meals and $100 Munch Money (availability limited, junior standing or above required). Meals can be used for breakfast at Wood Center Grill 155 and lunch and dinner at Lola Tilly. Block meals can be exchanged for $5 per meal at any dining retail location on campus (excluding Subway). $945/semester
- **The Chena Meal Plan**: Enrollment is limited to juniors, seniors and graduate students. Providing the maximum possible flexibility, this plan includes $1,100 in Munch Money that can be spent at any UAF dining location. $1,100/semester
- **The WCC Meal Plan**: Enrollment is limited to Wickersham, Cutler and commuter students. With $600 in Munch Money that can be spent at any UAF dining location, this plan provides a flexible way for students to participate in dining activities with friends on campus and gives students a break from cooking for themselves. $600/semester

USING YOUR MEAL PLAN

Meals are accessed using the Polar*Express* student ID card. With Munch Money that accompanies your plan you have the option of using the Polar*Express* Card to eat at any of the campus dining locations or to make purchases at most campus vending machines.

All residence hall students are required to purchase a meal plan, with the exception of residents living in Cutler Apartment Complex and graduate students. Students who do not live on campus but are interested in purchasing a meal plan can contact Dining Services at 907-474-6661. Students wishing to share meals with others may use Munch Money, or purchase the Denali, Nanook, or Upper Classman Block meal plan, all of which include guest privileges.

Dining services on campus are provided by UAF partner NANA/Sodexho, an international food and facilities management services company. Check Dining Services' website at www.uafdining.com for additions or changes.

Where to Get More Information

Dining Services
University of Alaska Fairbanks
116 Eielson Building
P.O. Box 757815
Fairbanks, Alaska 99775-7815
Email: uaf-dining-dept@alaska.edu
Online: www.uafdining.com
Telephone: 907-474-6661
Fax: 907-474-5707

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Residents of the MacLean House, on the Fairbanks campus, relax in the common room between classes.

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Services and Resources

Academic Advising and Learning Assistance

Academic advising is a vital part of your experience as a student at UAF. In fact, academic advising is so important UAF requires you to meet with your academic advisor at least once a semester before you can schedule your courses. Your academic advisor will assist you with the development of an educational plan encompassing your academic and career goals, requirements of your major and your semester-by-semester plan of study in order to make the best use of your credits. Students can also view their degree and major requirements through DegreeWorks, UAF's graduation positioning system, which is available at UAOnline at http://uaonline.alaska.edu. UAF students who are admitted into a major will be advised by a faculty or staff advisor from their department. Visit www.uaf.edu/advising/ for academic advisor contact information.

The Academic Advising Center in the Gruening Building assists general studies and pre-major students as well as students in majors who are exploring other baccalaureate or pre-professional degree programs. Certificate, associate, vocational and technical program students are advised at the Community and Technical College Student Assistance and Advising Center in downtown Fairbanks. Native and rural Alaska students are encouraged to seek an academic advisor from Rural Student Services in the Brooks Building. Students based at community campuses outside of Fairbanks can contact their local student services staff for information on registration, deadlines and other policies unique to their campuses or regions.

ACADEMIC ADVISING CENTER

Academic Advising Center staff and advisors offer guidance for general studies students (undecided and exploratory), pre-major, AHEAD students, non-degree students and students in transition from a declared major to another degree program. The center also serves as a clearinghouse for general university and degree information. Academic advisors also help students with information about non-traditional credit options like credit for prior learning and pre-professional academic programs like veterinary science, law, dentistry or pharmacy.

The Academic Advising Center, in cooperation with other departments, sponsors student success workshops on a wide variety of special topics including study skills, deciding on a major and overcoming math anxiety. Staff at the Academic Advising Center can provide academic support with reference materials, referrals, and study assistance to build and refresh knowledge in English, math, reading, science and writing. Staff can also help students discover their interests, abilities and aptitudes using software programs, inventories and other tools and assessments that provide guidance about careers and academic majors. These programs are available to students at no charge.

Contact the Academic Advising Center at 509 Gruening Building, 907-474-6396, toll free at 888-823-8780 or via email at uaf.advising@alaska.edu. Specific information for students, including degree program worksheets, can be found on the web at www.uaf.edu/advising/.

COMMUNITY AND TECHNICAL COLLEGE STUDENT ASSISTANCE AND ADVISING CENTER

The Community and Technical College Student Assistance and Advising Center provides advising and support for students in A.A. and A.A.S. degree, certificate and specialized training programs to contribute to a successful learning experience and transition to a career. Staff at the center recognize the unique concerns of adult and returning students as well as traditional students entering college. Advisors can help with pre-admission advising, academic assessment and placement, financial aid information and applications, and assistance with choosing a major.

The center offers academic support through developmental courses, workshops, classroom presentations and one-on-one assistance to help conquer academic hurdles. In addition, the CTC Student Assistance Center staff provide personalized career advice based on job market information and a student's personal goals. Staff at the center assure that students have a broad base of support as they plan the move from college to career.

For more information, contact Student Assistance, Community and Technical College, 604 Barnette Street, Fairbanks, Alaska 99701, call 907-455-2800, or visit www.ctc.uaf.edu/student/.

RURAL STUDENT SERVICES

Rural Student Services is the vital link between the Fairbanks campus and rural Alaska communities. RSS provides comprehensive academic advising services with a focus on the freshman and sophomore years. Advisors at RSS recognize and are sensitive to the unique cultural components of Native and rural students at UAF. RSS advisors provide comprehensive advising and referrals to various support services on the Fairbanks campus. RSS advisors register students for classes, explain academic requirements and explore degree options. Other RSS services include assistance with admissions and financial aid, career advising and student advocacy.

RSS functions as a student center in the Brooks Building to provide an atmosphere where students can share Native cultural traditions on campus and attend a variety of Native student club activities. Students who are enrolled at UAF and are Alaska Native or come from a rural area are encouraged to use RSS as their home base.

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For more information contact Rural Student Services, Brooks Building main floor, call 907-474-7871 or 888-478-1452, email fyrss@uaf.edu, or visit www.uaf.edu/ruralss/.

INTERNATIONAL STUDENT ADVISING

UAF students from other countries face many situations that American students do not encounter. International students must comply with immigration regulations, adapt to a new and often strange culture and adjust to the American system of higher education. International student advisors serve as a liaison between the student and various U.S. immigration agencies. Advisors authorize documents for student visas, help students adjust to UAF and provide immigration and personal assistance. For more information, contact the Office of International Programs and Initiatives by calling 907-474-7677 or 907-474-7583, via email at fyisa@uaf.edu, or online at www.uaf.edu/oip/.

STUDENT SUPPORT SERVICES

The Student Support Services program provides students with opportunities for academic development, assists with college requirements, and serves to motivate students towards the successful completion of their degree program. The program is funded by a TRiO grant from the U.S. Department of Education.

Services include a drop-in tutoring center, instruction in mathematics skills, tutorial services, academic advising and mentoring, cultural and social engagement, a loan program for laptop computers and other media, and direct financial assistance to qualified participants.

All services are provided free of charge to eligible students. Our program is staffed with both professional and certified student tutors.

In order to receive SSS program services, a student must have academic need and meet one of the following criteria:

- be financially limited according to federal criteria,
- be a first-generation college student (meaning neither parent has earned a bachelor's degree), or
- have a documented physical or learning disability.

Participants must also be U.S. citizens or permanent residents, enrolled in at least 6 credit hours and intend to obtain a bachelor's degree.

For information, contact Student Support Services in 512 Gruening Building, 907-474-6844, email fysssp@uaf.edu or visit www.uaf.edu/sssp/ for an application.

TUTORING SERVICES

Information about lab hours for all Fairbanks campus academic support resources as well as tutoring options is located on the Academic Advising Center website at www.uaf.edu/advising/student/resources/. Many of these resources are free of charge or cost a nominal fee.

- **Accounting Lab**
  The Accounting Lab provides tutoring services to students enrolled in accounting courses. Located in 225I Bunnell Building, the lab is staffed by accounting graduate students and outstanding undergraduate students. Lab hours are assigned (but flexible) Monday through Friday. For more information, contact the Department of Accounting and Information Systems at 907-474-1945.
- **Chemical Society Tutoring Lab**
  Located in 170 Natural Sciences Facility, students must reserve a time to receive tutoring assistance using the sign up sheet on the door. For more information contact the Department of Chemistry and Biochemistry at 907-474-5510.
- **Developmental Education Math, English and Reading Labs**
  The Department of Developmental Education provides academic support labs in math, English and reading. These labs are located at each of the rural campuses, Community and Technical College, and on the Fairbanks campus. Labs provide tutoring and small group instruction for students taking developmental, academic or vocational math, reading and writing courses. Academic support labs supplement and support student learning as well as improve and expand student skills in these areas. For further information contact your local campus or the Department of Developmental Education at 907-474-1112.
- **Foreign Language Laboratory**
  The language lab, located in 609 Gruening, provides assistance in French, Spanish, Japanese, German, Russian and Chinese. Computer programs, CDs, cassettes and spell-checkers are available for student use. Call the Department of Foreign Languages and Literatures at 907-474-7396 for lab hours.
- **Math and Statistics Laboratory**
  This lab provides flexible-hour assistance to students enrolled in mathematics and statistics courses. The lab is coordinated by faculty, and services are provided by students. For more information, contact the math department at 907-474-7332.
- **Supplemental Instruction**
  Supplemental instruction sessions are regularly scheduled, informal review sessions in which students compare notes, discuss readings, develop organizational tools and predict test items. Students learn how to integrate course content and study skills while working together. SI is designed to reduce rates of attrition within historically difficult courses, improve student grades and increase graduation rates of students. Contact the Academic Advising Center at 907-474-6396 or advising@uaf.edu for more information.
- **Writing Center**
  The Writing Center is open Sunday through Friday for tutoring all enrolled students. The staff, composed of English graduate teaching assistants and outstanding undergraduate students, reviews student writing projects at any stage from planning to drafting and revising. Tutors are available to help students improve grammar and usage. For information, contact the Writing Center, 907-474-5314.

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Academic Computing

The Office of Information Technology provides technology, expertise and resources to support the university's academic mission for students, faculty and staff. There are several student computing labs across the Fairbanks campus, including in 319 Bunnell, 404 Rasmuson and 110 Moore-Bartlett-Skarland. In addition, a video editing/podcast station is available through Campus Technology Services.

The Student Computer Support Center provides free help for student's personal computers and is located in the OIT Desktop Support Office in 226 Bunnell. The residence halls have wired Internet access in dorm rooms and wireless Internet is available in most public areas in all buildings on the UAF campus.

There are many video conference classrooms and other video-enabled rooms available upon request. Video Conferencing Services provides consultation, planning, training and scheduling services. Contact VCS at 907-450-8390 or toll free at 800-910-9601.

The Support Center is your computing helpdesk and gateway to many of the services OIT offers. All of the services above may be requested through the support center. When you need help or technology information, the Support Center is a good place to start. Contact Support Center staff at two walk-up locations, at 401 Rasmuson and 102 Butrovich, and at 907-450-8300, toll free at 800-478-8226, via email at helpdesk@alaska.edu or at www.alaska.edu/oit/.

Academic Records, Registration and Graduation

The Office of Admissions and the Registrar provides guidance for all students in registration, academic records support, academic policy interpretation, classroom scheduling, degree audits, graduation certification and transcript processing. The Office of Admissions and the Registrar offers various training workshops for students and staff on a wide variety of topics including DegreeWorks, UAOnline, faculty grading and registration. All services (i.e., registration, grades, degree audits and unofficial transcripts) are available through UAOnline at http://uaonline.alaska.edu. Information about how to register is available at www.uaf.edu/register/.

For more information, contact staff in the Office of Admissions and the Registrar on the first floor of Signers' Hall, call 907-474-7500, email at registrar@uaf.edu or visit www.uaf.edu/reg/.

Alumni Association

The UAF Alumni Association is an active network of graduates and former students who support the university and broadly advocate on its behalf. The association offers scholarships and sponsors various campus events and projects. The association's Alumni Mentor program assists students with degree program and career planning. Through the Alumni Association, students have the opportunity for lifelong involvement with UAF and their former classmates. Call 800-770-ALUM or 907-474-7081, or visit www.uaf.edu/alumni/ for more information.

Army ROTC

UAF is home to the only Army Reserve Officers Training Corps (ROTC) in Alaska. The program began in 1922 as a military science curriculum mandatory for all male freshmen and sophomores. In 1935, UA President Charles Bunnell petitioned the War Department to officially open an Army ROTC program at the university. Approval was granted in 1940 and ROTC has continued to develop ever since. Today's UAF military science program is staffed with regular Army and Alaska National Guard officers and non-commissioned officers, providing students with a balance of knowledge and experience. This curriculum challenges students to develop interpersonal, mental and physical skills, cultivating leaders of character, capable of bearing the responsibilities of tomorrow's civil and military leadership positions.

The focus of ROTC is academic excellence and preparing leaders. All students enrolled in at least one course are assigned a faculty member to provide leadership and academic counseling. The counseling is closely monitored by the department head and is conducted twice every semester.

ROTC offers a variety of resources including scholarships, athletic teams and academic assistance. The Arctic Region Supercomputing Center (ARSC), funded by the Department of Defense, gives ROTC students the opportunity to work on ARSC systems through research assistantships.

Neighboring Fort Wainwright offers students numerous opportunities to participate in military activities such as the arctic biathlon competition, mentorships and recreational activities in an arctic environment.

The Department of Military Science hosts several activities and organizations. The Ranger Challenge team, a varsity-level sport, participates in an annual competition against other schools in the western region. Other athletic events include a rifle team and color guard. The color guard routinely participates at the opening of UAF Nanook sporting events. The ROTC Cadet club, also sponsored by the department, is an integral part of the university. Cadet club members organize campus events and public service projects.

FINANCIAL ASSISTANCE

Army ROTC provides financial assistance in the form of scholarships and stipends. The current stipend ranges between $300 and $500 monthly depending on military science class level, and is tax free for all committed cadets. ROTC scholarships also pay 100 percent of tuition and mandatory fees and provide $900 annually for books and supplies. In accordance with NCAA regulations for this

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university, Army ROTC scholarships may be awarded in conjunction with athletic scholarships. Scholarships are available for four, three or two years and may be used for graduate studies.

Army ROTC also offers partnership, or simultaneous membership programs, with the Reserves and National Guard. These partnerships provide a suite of financial assistance programs for ROTC cadets, including tuition assistance, GI Bill benefits and bonuses, stipends and pay. In addition, Army ROTC at UAF is granted a limited number of room waivers and chancellor's tuition waivers for qualified students. For more information call 907-474-7501 or visit www.uaf.edu/rotc/.

CURRICULUM

Military science courses are the same as any other college-level course and satisfy electives to a maximum of 23 credits toward degree requirements. The military science curriculum is an approved minor which includes credit for one written and one oral intensive course towards a B.S. or B.A. Classes, including outdoor skills labs, are offered every semester. Labs are designed to give students hands-on instruction in areas such as rappelling, skiing and survival.

Army ROTC comprises two levels: the basic course followed by the advanced course. Credit for the basic course can be earned in three ways: by completing freshman and sophomore military science classes, by completing a four-week summer camp or by having prior military basic training. Students incur no obligation to Army ROTC or the Armed Forces during the basic course.

Students who complete the basic course may enter the advanced course, which is normally reserved for juniors and seniors pursuing a commission in the regular Army, Army Reserves or Army National Guard. For more information about ROTC at UAF, see Costs and Financial Aid, Bachelor's Degrees — military science and the military science course descriptions, or contact the Department of Military Science at 907-474-6852/7501, email rotc@uaf.edu.

ASUAF

The Associated Students of the University of Alaska Fairbanks is located in the Wood Center, and all students enrolled in 3 or more credits are ASUAF members. ASUAF runs service departments and programs dedicated to the interests and welfare of UAF students. ASUAF represents UAF students to the university administration, the board of regents and the Alaska Legislature. Officers of ASUAF are selected by the student body in elections held every fall and spring semester. For information, visit ASUAF online at www.asuaf.org, or by phone at 907-474-7355.

Athletics and Recreation

ATHLETICS DEPARTMENT

The National Collegiate Athletics Association is the primary association which governs and controls intercollegiate athletics on the national level. UAF is a multidivision member of the NCAA with 10 teams competing at the Division I and Division II levels, including men's and women's basketball, men's and women's cross country running, men's and women's Nordic skiing, coed rifle, women's volleyball, women's swimming and men's ice hockey. For intercollegiate athletics information, call 907-474-7780 or visit www.alaskananooks.com.

UAF has conference affiliations with the Great Northwest Athletic Conference, Central Collegiate Hockey Association, Central Collegiate Ski Association and Pacific Collegiate Swim Conference. The Nanook rifle team competes as an independent.

The Ernest N. Patty Center, completed in 1963, houses a 2,000-seat gymnasium, a 25-yard swimming pool, courts for handball, squash and racquetball, a weight room, a rifle range, classrooms, offices and locker rooms with saunas. The Patty Center is home to the university's NCAA varsity teams as well as the university's Army Reserve Officers' Training Corps program. In 1979, the 1,300-seat Patty Ice Arena was built to the west of the Patty Center. The Nanook men's hockey team practices at the Patty Ice Arena and also practices and competes off campus at the 4,595-seat Carlson Center.

CAMPUS RECREATION

Recreation activities at UAF are housed in the Student Recreation Center, the Patty Ice Arena and the Patty Center. For information on hours, recreational activities or intramurals, call 907-474-5886 or visit www.uaf.edu/src/.

The SRC provides a weight room and a large gym floor that can be divided into courts for volleyball, tennis, badminton, soccer and basketball. In addition, a two-story climbing wall, an eight-lap-per-mile running track, aerobics/dance floor and cardiovascular machines provide many options for a well-rounded workout.

The SRC offers a wide variety of structured and unstructured recreational activities. Intramural leagues and competitions, aerobic workouts and fitness and recreation instruction give students many opportunities to stay fit, learn lifetime skills and use the skills they already have. SRC staff members develop and support sports clubs in response to student interests and the resources available.

Outdoor fields for soccer and Ultimate Frisbee are next to the SRC, and the campus has many miles of cross-country trails for running, walking and skiing, including a lighted ski trail. In addition, recreational skating, recreational hockey, intramural broomball and intramural hockey take place at the Patty Ice Arena, which is also next to the SRC.

Students with disabilities are encouraged to use the SRC and participate in campus recreation programs. Anyone who

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is confronted with any barrier to participation is urged to contact the SRC office.

Eligible students have access to the facilities when your fees are paid — just remember to bring your workout shoes as street shoes are not allowed on the courts or floors.

Career Services

Career Services provides career counseling and job search assistance. We will also review statements for graduate school applications. The staff will review resumes, cover letters and conduct practice interviews during office visits or through UAFCareerConnect, an online resource located on the Career Services website, for students, alumni and employers. The department also will administer interest and personality assessments such as the Strong Interest Inventory and the Myers-Briggs Type Indicator. Information about employment, internships and on-campus jobs is available 8 a.m. – 5 p.m., Monday – Friday year-round.

Through UAF Career Services, students and alumni can network with employers and explore careers by participation in on-campus recruitment events, career weeks focused on specific fields, and job fairs where students can apply for full-time employment and internships with local, statewide and national employers. Career Services is located on the first floor of the Eielson Building. For more information call 907-474-7596, email careerservices@uaf.edu or visit www.uaf.edu/career.

Continuing Education

UAF's Community and Technical College offers training and continuing education programs designed to meet employment needs in the trades and professions. In response to individual and community demands, CTC provides academic short courses, non-credit workshops, supervisory skill seminars for local businesses and agencies, and general programs for cultural enrichment. Continuing education units are not considered when calculating enrollment status for the semester. Contact the CTC center for professional development at 907-455-2858 for more information.

Working with other UAF colleges and schools, CTC also provides academic courses during evening hours and on weekends at locations both on and off the Fairbanks campus. Alternative course meeting times and locations are designed to meet the needs of working adults and other students whose commitments to jobs, community or family do not allow them to participate in regular semester-based programs.

Some courses are delivered through video, computer programs and the Internet-based Blackboard, allowing students to progress at their own pace. Students can fulfill general university requirements for the baccalaureate degree through night, weekend and distance-delivered courses. CTC also serves the non-degree student with evening courses for general interest. For information, contact the Community and Technical College at 907-455-2800 or 907-455-2877 (TTY and voice).

Cooperative Extension Service

The UAF Cooperative Extension Service is part of the largest informal education system in the world, connecting Extension programs and land-grant colleges and universities in every U.S. territory and state.

Whether teaching people how to can salmon, build a house or compost with worms, Extension Service staff have provided research-based, practical education to Alaskans since 1930. Extension now offers community outreach and engagement programs in all areas of the state.

UAF's outreach role is filled in part by Extension faculty and staff located in Anchorage, Bethel, Delta Junction, Fairbanks, Juneau, Kodiak, Nome, Palmer, Sitka and Soldotna, and in affiliate offices with the Tanana Chiefs Conference, Eielson Air Force Base and Thorne Bay.

As the state's gateway to the university system, Extension serves some 60,000 Alaskans annually, providing a link between Alaska's diverse people and communities by interpreting relevant knowledge of interest to Alaska residents. Major issue areas include food safety and security; health; climate change; energy; youth, families and communities; and economic development.

Extension has produced hundreds of publications and videos on a variety of topics with practical information that Alaskans can use. These are available at district offices or online at www.uaf.edu/ces/.

For more information, call 907-474-5211, toll-free at 877-520-5211 or visit www.uaf.edu/ces/.

Developmental Education

The mission of developmental education at UAF is to make educational opportunity and success possible for all students by developing the skills and attitudes necessary to achieve academic excellence and student success, and develop lifelong learning skills.

Developmental education courses prepare students for university academic and vocational/technical programs by improving skills in math, writing and reading. Study skills classes prepare students to successfully negotiate the university experience. A student's need for developmental education courses is determined by high school transcripts, test scores, other achievement data and discussions with counselors, advisors and instructors. Students may also take developmental education courses when they want to improve their skills or proficiency.

There are three categories of developmental education courses: developmental math, developmental English (writing skills), and developmental studies (reading and study skills). Descriptions of developmental education classes are

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listed in the courses section under developmental math, developmental English and developmental studies.

For more information, contact the Department of Developmental Education offices at 907-474-1112 or visit www.uaf.edu/deved/.

Disability Services

The Disability Services program, located in 208 Whitaker, provides services to students with documented disabilities on the Fairbanks campus as well as the Bristol Bay, Chukchi, Interior Aleutians, Kuskokwim, Northwest, and Community and Technical College campuses, Distance Education, and the College of Rural and Community Development. The goal of Disability Services is to ensure equal access to educational opportunities at UAF. Academic accommodations are free of charge and available to any student who qualifies as an individual with a disability and is enrolled in at least 1 credit hour.

Disability Services operates an assistive technology lab with specialized software. UAF has an accessible shuttle bus service equipped with a wheelchair lift for transportation on campus and most campus buildings are accessible. Accessible living accommodations are available through Residence Life. There is a swimming pool with a hydraulic lift in the Patty Center.

For more information contact the director of Disability Services at 907-474-5655 or 907-474-1827 (TTY), email uaf-disability-services@alaska.edu, or online at www.uaf.edu/disability/.

Exchange Programs

NATIONAL STUDENT EXCHANGE

UAF is a member of the National Student Exchange. Through this program, qualified students may apply for exchange enrollment at any one of more than 170 public colleges and universities throughout the United States, its territories and Canada. NSE enables students to study at other member institutions and participating schools and take advantage of specialized courses or unique programs. Participation in the program is limited to one year.

Exchanges generally take place during the student's sophomore or junior year. Applicants must have completed a minimum of two consecutive semesters at UAF as full-time degree-seeking students with a 2.5 cumulative GPA. Tuition is assessed by the host institution at the in-state rate, or the student may choose to pay tuition at UAF. The application deadline is Feb. 15 before the term of exchange. For more information, visit www.nse.org and contact the NSE coordinator in the Office of Admissions and the Registrar, 907-474-7500.

Note: Students attending any campus of the University of Alaska system under the National Student Exchange (NSE) program are assumed to be receiving the benefit of reduced tuition because of their enrollment at a NSE partner university in another state. Therefore, time spent in NSE does not count toward the time required to establish residency in Alaska for tuition purposes. If students end their participation in NSE, they could begin establishing residency for tuition purposes as set forth in the UA Resident and Non-resident Tuition policy on page 54.

STUDY ABROAD AND INTERNATIONAL EXCHANGE PROGRAMS

Studying abroad or participating in an international exchange or internship is an excellent opportunity for every UAF student to learn about other cultures and gain international experience while earning academic credit. Students participating in approved international exchange, study abroad or internship programs enroll at UAF and receive UAF credit. The Alaska Student Loan and most other forms of financial aid may be used to cover costs of international academic programs; scholarships are also available for many programs. Students interested in gaining international experience should begin planning early in their UAF careers, particularly because prior study of a foreign language may be required for some programs and is highly recommended for others. Applicants must have completed a minimum of two consecutive semesters at UAF as full-time degree-seeking students with a 2.5 cumulative GPA. Other requirements may also apply, and all applications are subject to approval by the Office of International Programs and Initiatives. Application deadlines are Oct. 1 for spring semester programs and March 1 for summer, fall semester, or academic year programs.

Students approved to participate in study abroad or exchange programs pay a $150 processing fee to UAF. For study abroad programs, all tuition, housing and student fees are paid directly to the program provider or host institution. Students participating in exchange programs pay for 15 credits of undergraduate or 9 credits of graduate UAF tuition, the UAF technology fee and a 2 percent of tuition network fee in addition to the $150 processing fee. Tuition and fees are assessed on a semester basis.

North2north, one of UAF's student exchange programs, is organized by the University of the Arctic. Programs are focused on studies in and of the North and are designed to enhance the arctic perspective of UAF academic programs.

Programs are available in more than 70 countries worldwide.

Contact the Office of International Programs and Initiatives for more information. Call 907-474-7192, email ekiseri@alaska.edu, or visit www.uaf.edu/oip/.

General Studies

Students pursuing a bachelor's degree who haven't declared a major or haven't decided which major to pursue are admitted as general studies students. General studies students usually take courses required for the university core curriculum. Many of these courses are the same for all majors and allow you to make progress toward completing degree requirements, while at the same time investigating subject areas that may help you choose a major or career. General studies students work with academic advisors in the Academic

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Advising Center who encourage exploring, selecting and committing to an appropriate major. All general studies students must declare a major before they have earned 75 credits. To declare a major, simply complete a change of major form available from the Office of Admissions and the Registrar or online at www.uaf.edu/reg/. Students receiving GI assistance or veteran's benefits may be required to change to a declared major to keep their benefits award. Students must have declared a major in order to participate in the Western Undergraduate Exchange (WUE) program.

The director of the Academic Advising Center functions as the department chair and the vice provost functions as the dean for general studies and oversees academic assistance and actions concerning general studies students. For more information about general studies, contact the Academic Advising Center, 907-474-6396 or toll-free at 888-823-8780, or contact the vice provost's office at 907-474-6634.

PRE-MAJOR

Students admitted in pre-major standing have not met the admission requirements for bachelor's degrees, but are intending to major in a bachelor's degree. As a baccalaureate-intended student, you will generally work with advisors in the Academic Advising Center, Rural Student Services or a community campus, but it is helpful to also contact the department of your intended major. Because not all requirements for immediate admittance to a baccalaureate degree will have been met, pre-major students will work with an academic advisor to determine the best selection of courses to pursue. Students who are in good standing and have completed 14 credits at the 100-level or above with a C grade average (2.0) or better, of which 9 credits must satisfy baccalaureate core requirements, will be changed to major status. The assistant provost for general studies will notify students of their change of status and inform the registrar. Pre-major students do not use the change of major form to move from pre-major to major status but may use the form to change from pre-major status in one program to another program. Academic assistance and actions are processed the same as for general studies students.

Greek Life at UAF

Sigma Sigma Sigma became the first national sorority in Alaska when it was installed at UAF in 1993. Founded in 1898, the sorority has more than 90,000 members nationwide who share a strong commitment to sisterhood, academics and community service as part of the college experience. Sorority membership provides Sigmas with academic support and leadership opportunities.

Sigma Phi Epsilon, the first national fraternity in Alaska, was installed at UAF in 1997. The fraternity began nationally in 1901, founded on the principles of virtue, diligence and brotherly love. It is one of the oldest and most respected fraternities in the nation. Through community service, campus leadership and fraternalism, Sigma Phi Epsilon gives its members the opportunity to live a balanced life.

Alpha Phi Omega is a national, co-ed service fraternity that has set the standard for college campus-based volunteerism since 1925. The organization strives to help each individual member develop leadership skills, experience friendship on many levels and provide service to others.

For more information on Sigma Sigma Sigma, Sigma Phi Epsilon and Alpha Phi Omega, visit us online at www.uaf.edu/studentorgs/ or contact the LIVE Program (Leadership, Involvement, Volunteer Experience) at 907-474-1959.

Honor Societies

These honor societies are active at UAF:

- Gamma Theta Upsilon (geography)
- Golden Key International Honour Society (all disciplines)
- National Society of Collegiate Scholars (all disciplines)
- Phi Alpha Theta (history)
- Pi Sigma Alpha (political science)
- Psi Chi (psychology)
- Sigma Tau Delta (English)
- Tau Beta Pi (engineering)

For more information contact the Honors Program at 907-474-6612 or the LIVE Program at 907-474-1170.

Honors Program

The UAF Honors Program provides academic engagement and social enrichment opportunities for exceptionally talented, creative and academically motivated students. It promotes the highest standards of academic, professional and personal achievement and encourages students to think critically and to act in ways that benefit communities and society. Students in the Honors Program experience small classes, direct contact with top faculty members and a flexible curriculum. They participate in intellectual and social communities of student and professional scholars, and are encouraged to pursue their own intellectual interests. The Honors Program is based on the conviction that genuine achievement in college means developing broad competence and excellence within and outside a student's major field of specialization.

ELIGIBILITY

Undergraduate students from all disciplines are eligible for admission to the Honors Program. New freshmen should have attained a high school GPA of no less than 3.6 and a composite SAT score of no less than 1820 or an ACT composite score of no less than 27. Sophomores must have a cumulative college GPA of 3.5 and clear admission to UAF. Upper-division applicants with a similar record are admitted as honors thesis scholars.

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Students generally enter the Honors program in the fall semester. Applications for entrance the following fall must be on file by May 1, but prospective Honors students are encouraged to apply by Feb. 15 in order to qualify for scholarships. Late applications are considered on a space-available basis, and a limited number of students may be accepted at mid-year. The application for admission to the Honors Program is separate and distinct from the application for admission to the university, and must be submitted separately to the Honors Program office. Promising students already admitted to UAF may be offered enrollment in the program.

PROGRAM FEATURES

The designation of "Graduation with University Honors" is awarded to graduates who complete 27 credits of honors work and a senior Honors capstone project. Students who enter the program as juniors or as seniors qualify for the designation "Honors Thesis Scholar" if they complete 12 credits of honors work and a senior Honors capstone project.

Honors courses are offered in all disciplines, including courses specifically designed for the Honors Program as well as special enrichment sections of standard university courses. Students in the Honors Program may also do individualized study in their majors. Students in the program must be regularly enrolled full-time undergraduate students.

In a typical year, the Honors Program offers courses in the sciences, mathematics, English composition, communication, one or more courses from the core Perspectives on the Human Condition, and courses in business, humanities and the social sciences. For more information and application forms, contact the Honors Program, Box 756282, UAF, Fairbanks, Alaska 99775. The Honors House is located at 520 Copper Lane. Phone 907-474-6612 or visit www.uaf.edu/honors/.

Libraries

The Elmer E. Rasmuson Library, with more than 1.1 million volumes, is the largest library in the state. The building was recently renovated and offers wireless networking and walk up ports, as well as designated quiet study spaces with natural lighting, group study rooms and a secure 24-hour study space with an open-access computer lab.

The library offers extensive reference and instructional services for students. Library faculty and staff help students conduct library research using UAF online and print databases and collections. The library information and research course, LS F101, is part of the core curriculum and provides students with an introduction to effective methods of identifying, locating and evaluating information resources.

Online catalogs and databases provide access to library resources at UAF, UA system libraries and libraries nationwide. Rasmuson Library's website serves as a gateway to more than 170 online resources with broad coverage in the sciences, humanities and social sciences, management, and engineering. Web-based indexes and collections link to full-text articles from more than 20,000 periodical titles. Additional web-based resources include reference tools, electronic books, specialized sources for arctic and polar information and indexes to special formats such as government documents and dissertations.

Rasmuson Library is a federal documents depository, receiving 40 percent of the materials published by the U.S. Government Printing Office. Special collections in the library include the internationally recognized Alaska and Polar Regions collections, covering books, periodicals, archival documents, manuscripts, historical photographs, film, oral histories and maps. APR hosts Alaska's Digital Archives and continues to digitize archival materials in an effort to make more specialized materials available to the public.

The BioSciences Library, in the Arctic Health Research Building on UAF's West Ridge, is a branch of the Rasmuson Library which provides substantial resources in the life sciences and services. Both libraries provide interlibrary service for materials not owned by UAF libraries. Electronic document delivery for materials in the collections is available for students, faculty and staff.

For Rasmuson Library information, call 907-474-7481, email fyref@uaf.edu, or visit http://library.uaf.edu. For BioSciences Library information, call 907-474-7442, email fybmlib@uaf.edu, or visit http://library.uaf.edu/biosci/.

Multicultural Affairs and Diversity

The Office of Multicultural Affairs and Diversity seeks to create an environment of cultural sensitivity and appreciation of all the cultures represented on our campus. The office coordinates cross-cultural programs to promote diversity, offers advice and assistance, tutoring and peer mentoring, and a network of academic and personal support for students. The Office of Multicultural Affairs and Diversity serves as a "home away from home" and a hub for student clubs such as the Black Awareness Student Union, Latin, Arctic Aka Dondo and many other cultural clubs at UAF. All students are welcome to participate in its activities and use its resources. The office is located in 110 Eielson Building. For more information contact the office at 907-474-7300, fax 907-474-5381, via email at fyoma@uaf.edu or visit www.uaf.edu/omad/.

New Student Orientation Program

The goal of New Student Orientation is to help incoming students establish a foundation for success. Orientation is required for all first-year baccalaureate degree students entering UAF with less than 30 credits. The program is also required for all EDGE students (first year residential students under 20 years of age with fewer than 20 credits), UA Scholars and incoming international students in

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undergraduate F-1 or J-1 status. All students new to UAF are strongly encouraged to attend.

New Student Orientation features a variety of workshops and activities to address the needs of incoming students, including campus tours, meeting faculty and staff, numerous campus resource seminars and many fun events. Fall semester orientation includes the popular parents' Family Orientation. Fees are $75 per student for fall orientation and $35 for spring. For more information, contact the New Student Orientation office at 907-474-1103, or visit www.uaf.edu/orientation/.

Northern Military Programs

Northern Military Programs is Interior Alaska's point of contact for University of Alaska programs and services for military personnel, their families, contractors and civilians. Classes are offered at Fort Wainwright, Eielson Air Force Base and North Pole High School. In addition, NMP offers courses to the Delta community at Fort Greely and the Career Advancement Center in Delta Junction.

Program offerings include the associate of arts degree at UAF, and the bachelor of business administration and the master of public administration degrees at the University of Alaska Southeast via distance education. Courses are offered at times that are convenient for students and via distance delivery. The National Testing Center at Eielson Air Force Base offers CLEP and DANTES testing at no charge for military members.

UAF is a member of the Servicemembers Opportunity Colleges degree network. This program allows for the evaluation of training and education and establishes lower residency requirements for service members.

For information contact Northern Military Programs offices at Eielson Air Force Base, 2623 Wabash Ave, Room 105, 907-377-1396; Fort Wainwright/North Pole, 2107 Montgomery Road, Room 99, 907-356-3826; or Delta/Ft. Greely, Delta Career Advancement Center, 1696 North Clearwater Ave, 907-895-4605.

Polar*Express* Identification Card

The Polar*Express* card is the official UAF photo identification card used by students, staff and faculty for access to UAF facilities and to make purchases.

The Polar*Express* card is your identification to check out library books, vote in student elections and to access health and other student services. The card's magnetic stripe holds a unique key that provides secure access to residence halls, laboratories and the Student Recreation Center. You can deposit money into your Bear Bucks account which is linked to your Polar*Express* card. Bear Bucks can be used to pay for goods at all dining services locations, vending machines, photocopiers, the Wood Center counter and the bookstore. Bear Bucks are also accepted at a variety of off campus locations. To view a complete list, visit www.uafbearbucks.com.

For Polar*Express* card information, call 907-474-7657 or visit www.uaf.edu/aux-bus/polarexpress/.

Police and Fire Departments

The UAF Police Department was founded in 1991 to meet the increasing needs of the university community. Since then it has become a progressive, proactive department striving toward active community involvement as well as the protection of persons and property on the UAF campus. In addition to patrol duties the department makes presentations on topics of importance to the community and supports a college-oriented crime prevention program.

The department hires college students as part-time community service officers who assist with campus security and patrol issues. These student officers have gone on to work in police agencies around Alaska and the nation as a result of their experience with the UAF Police Department.

The University Emergency Communications Center is a regional 24-hour 911 communications center serving the UAF community as well as a portion of the Fairbanks North Star Borough. In addition to handling local calls, the center also receives 911 calls from communities along the Parks Highway from Fairbanks to Cantwell. The center employs full- and part-time career dispatchers. Dispatchers are trained in law enforcement, emergency medical service (EMS) and fire dispatching.

The University Fire Department provides fire, rescue, EMS response, public assistance and hazardous materials response to the UAF campus as well as the University Fire Service Area and EMS district. The department provides protection for a 26-square-mile area and more than 22,000 people. The department is nationally recognized and staffed full time at two stations, one on campus and one in the fire service area. The department provides plan review and inspection services to the UAF main and remote campuses. The hands-on, interactive program develops highly skilled individuals able to perform all the duties of professional career firefighters. The fire department provides exceptional employment and career opportunities for students who are interested in a career in emergency services.

The emergency telephone for both police and fire is 911. For more information, call 907-474-7721 for the police department, 907-474-5770 for the fire department or visit www.uaf.edu/police/ or www.uaf.edu/fire/.

Post Office

The full-service campus post office is open 10 a.m. – 4 p.m., Monday – Friday. Located in 107 Constitution Hall, the post office provides postal boxes for students wishing to receive mail on campus. Rent of $45 per semester per box is collected by the post office. When leaving UAF permanently,

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students are expected to close their box, return the key and provide a forwarding address or the box will be closed and mail returned.

Post office boxes are for individual or family use, they are not to be shared with other students. Mail not addressed to the box holder will be returned. U.S. Postal Service mail is delivered to box holders only through their post office boxes; UPS and FedEx will deliver to the Residence Life Office. There is a $15 charge for replacing a lost box key. Keeping your mailing address up to date will avoid delays and errors in the delivery of your mail.

For more information or to open a post office box, email campuspostoffice@uaf.edu, call 907-474-7215, fax 907-474-7884 or write UAF Campus Post Office, P.O. Box 750100, Fairbanks, AK 99775-0100.

Student Health and Counseling Center

At the Student Health and Counseling Center, students may receive health care, counseling, substance abuse evaluation and referral, health education and assistance with health insurance. Students must pay the health center fee to be eligible for these services.

The medical staff provides primary health care and referrals for specialty medical services when appropriate. General office visits for illness and injury are provided at no charge. Physical examinations, medications, laboratory services and medical supplies are provided at reduced cost. Students should call for appointments. Urgent care appointments are available when necessary.

The counseling staff offers individual, group and crisis intervention counseling. Counselors, all with graduate-level training, assist with a variety of personal and interpersonal issues. Students are encouraged to schedule appointments. Students in emergency situations are usually seen the same day. The counseling staff also provides specialized evaluation and referral for alcohol and other drug problems at no charge when requested on a voluntary basis. There is a charge for mandatory evaluations.

Professional staff provide information, health education and referral for individuals and groups seeking to maintain or improve upon physical and mental health.

The Student Health Insurance program is administered through the center. An insurance coordinator is available to answer questions about policy coverage and to assist with information about how to file claims.

The Student Health and Counseling Center, located on the second floor of the Whitaker Building, is open weekdays during the regular academic year. For more information, call 907-474-7043 or 474-7045 (TTY), fax 907-474-5777, email uaf-sh-cc@alaska.edu, or visit www.uaf.edu/chc/.

Student Services

The Division of Student Services provides student-centered programs and services designed to assist students in achieving their personal, academic and career goals. In collaboration with the academic deans, we lead the university in recruiting a diverse student body. With the creative use of ongoing assessment, we support and develop programs and communities that contribute to the retention, success and leadership development of students.

The vice chancellor's office is a resource and referral center where any student who does not know where to look for a solution to a problem within UAF will find assistance. Student Services departments include the Office of Admissions and the Registrar, Financial Aid, Judicial Services, Career Services, Student Health and Counseling Center, Disability Services, Freshman and Transfer Services, Orientation, the Wood Center, Student Activities, Residence Life, Student Leadership Development, Upward Bound and ASUAF. For more information contact Student Services, 514 Gruening Building, email fyses@uaf.edu, call 907-474-7317 or visit www.uaf.edu/ses/.

Summer Sessions and Lifelong Learning

UAF Summer Sessions and Lifelong Learning offers a wide variety of academic opportunities. Courses are open to undergraduate and graduate degree-seeking students, community members and qualifying high school students. Summer programs begin with MAYmester, a two-week intensive term where students can earn up to 3 credits and continues with the full session that is divided primarily into two six-week terms offering students the chance to pick up core and/or degree-related courses.

In addition to standard collegiate academic programs, weekend focus and special interest classes are offered for the benefit of community members and college students alike. Activities on campus for youth include culinary arts camps, Spanish language camp, the Justice Academy, S.M.A.R.T. Academy, and business and leadership training, as well as the UAF Summer Music Academy and Visual Art Academy.

Besides offering in-state tuition for all students taking summer classes, SSLL offers several programs to financially assist summer students. These include the R.G. and Onnie V. Bouchum/La Shina R. Jones Memorial Summer Scholarships, the Earn and Learn Program and SSLL Tuition Awards for qualifying UAF undergraduate students and for students beginning an academic career.

Each summer the UAF campus hosts special events, guest speakers, concerts, the Fairbanks Summer Arts Festival and the Fairbanks Shakespeare Theatre.

During fall and spring SSLL offers a number of educational programs. There are opportunities for international travel study programs and in the beginning of January, WINTERmester offers credit and non-credit classes in a two-week intensive session. The Osher Lifelong Learning

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Institute, drawing on the experiences and talents of older adults (50 years +) in the Fairbanks area, offers a wide variety of opportunities for continued learning.

For more information, contact Summer Sessions, 216 Eielson Building, by phone at 907-474-7021, toll-free at 866-404-7021, email summer@uaf.edu or visit www.uaf.edu/summer/.

Testing Services

As a national test center, UAF Testing Services administers paper-and-pencil and computer-based exams. The office advises UAF students, prospective students and the community on national testing matters for college admissions and placement and for career and professional certification. Testing Services also coordinates credit by examination for local tests and for the College Level Examination Program (CLEP). The office also does private proctoring. For more information and registration materials, visit Testing Services in 211 Gruening Building, call 907-474-5277, email fytest@uaf.edu, or visit www.uaf.edu/testing/.

Upward Bound Classic Program

The goal of the Upward Bound Classic Program is improving the graduation rates of high school students and increasing the number of UBC graduates who enter colleges and universities. Upward Bound Classic offers two strands: a school year program that works with 13 high schools in Alaska, called "target schools," along with a six-week summer residential program held on the UAF campus, and the Pathways-2-College bridging program.

Upward Bound Classic serves 140 low-income first generation college students who demonstrate potential for academic success and whose parents have not earned college degrees. Services offered in UB target schools include tutorial sessions; educational, recreational or cultural events; group activities; exploration of postsecondary education opportunities and visits to campuses; financial aid application assistance; and participation in the six-week summer program on the UAF campus. The residential summer program emphasizes academic development for 40 target school students selected for participation and strengthens opportunities for enrollment in postsecondary education programs. The summer experience helps UBC students become familiar with the UAF campus, residence life, services provided and, most importantly, places an emphasis on academics.

Selection is based on a UBC student's participation and demonstrated commitment to attend college as a full-time student within a year following high school graduation. Pathway students have a unique opportunity to begin their academic postsecondary experience and gain a better understanding of the rigors of college life. These 10 students each year will have an early opportunity to experience residential campus life and university level studies with the support and guidance of UBC staff mentors. Students selected to attend will earn 6 – 7 college credits during the first six-week summer session at UAF. This program is only available to active Upward Bound Target School participants who have completed their junior year of high school and graduating seniors. Upward Bound Classic is a federally funded U.S. Department of Education TRiO program.

For more information, call 907-474-5685, email ub.classic@alaska.edu.

Women's Center

The UAF Women's Center provides resources and support to women students, faculty, staff and women in the UAF community as they pursue individual and collective goals. The center strives to create an atmosphere in which all people are free to affirm and celebrate their differences, including but not limited to differences of gender, race, sexual orientation, class, age, religion and physical and mental ability. Additionally, the center strives to ensure that UAF fulfills its mission and goals related to the education of women. In accordance with UAF's mission statement and strategic plan, the Women's Center exists to educate the university and the community about gender-related issues and thus enhances the possibility of fulfilling the university's goal to establish "a culturally diverse environment that values and promotes equal treatment of sexes, races and cultural and ethnic groups" throughout our community.

For more information, call 907-474-6360, email fywoc@uaf.edu, or visit www.uaf.edu/uafwomen/.

Wood Center

The William Ransom Wood Center, under the Division of Student Services, is the focal point of campus activities and services available to the university and Fairbanks community.

Services available at Wood Center include event scheduling, campus information, dining facilities, a television lounge, meeting rooms, laundry and shower facilities, and a recreation area with pool tables, video games and a bowling alley. Wood Center also has the campus lost and found center, an automated teller machine, tickets to cultural and sporting events and a branch of the Spirit of Alaska Federal Credit Union.

Wood Center is home to the Student Activities Office and Nanook Traditions. Student Activities organizes events designed to entertain, educate and inspire the UAF community. Nanook Traditions are among UAF's most highly anticipated annual events. These include the Starvation Gulch bonfires in September, International Education Week in November, Winter Carnival in February and Nanook SpringFest in late April. For more information visit www.uaf.edu/activity/.

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Explore Alaska's wild frontier by joining an Outdoor Adventures excursion. Outdoor Adventures organizes a variety of outings such as hikes, white-water raft trips and rock climbing excursions. We also offer courses such as ice climbing, sea kayaking and wilderness leadership. Outdoor Adventures rents equipment including backpacks, canoes, cross-country skis and much more. Visit Outdoor Adventures in the Wood Center or online at www.uaf.edu/woodcenter/outdoor/ for more information.

The UAF Leadership, Involvement and Volunteer Experience program provides opportunities for students to learn about and practice leadership skills and become involved on campus and in the community. Through the LIVE program students can complete and earn Co-Curricular Opportunities for Leadership Development certificates. The COLD certificates provide tangible ways for students to be recognized for leadership development within the UAF community and beyond. To find out more about the LIVE Program, visit the Wood Center or online at www.uaf.edu/leadership/.

More than 100 student organizations are active on campus, including clubs, honor societies and Greek life organizations. Membership in a student organization can help you make social connections. It can also help in career and leadership development and enhance your resume. Each semester a student organizations fair provides an opportunity to learn more about these diverse groups. You can also contact the LIVE program office to learn more about UAF student organizations.

The Wood Center Pub offers evening entertainment for those 21 and over with live music, an open mic night, movies, trivia games and karaoke. Special events include theme nights, beer and wine tastings, comedy performances, casing night and more.

For more information call 907-474-7037 or visit www.uaf.edu/woodcenter/.

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OCCUPATIONAL ENDORSEMENTS

Occupational Endorsements

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Steven George smooths his weld with a grinder during the final project of his welding class at the Community and Technical College's Hutchison Institute of Technology.

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How to Earn an Occupational Endorsement

To earn a UAF occupational endorsement, you must satisfy three sets of requirements: general university requirements; occupational endorsement and program (major) requirements. These requirements are all described in this section of the catalog. Requirements for your major are found in the Occupational Endorsement Programs section, beginning on page 88.

If your endorsement program is delivered collaboratively within the UA system (e.g., information technology specialist, early childhood education, human services and rural human services), then the credits you earn from each UA institution will be counted toward fulfillment of the program requirements and fulfillment of the minimum institutional residency requirements. Institutional residency requirements are the minimum number of credits you must earn from the campus where you earn a degree.

Occupational Endorsements

Occupational endorsement programs are designed to give students occupational training in a specific field. These programs are 9 – 30 credit hours and will be posted to the student's transcript upon completion and approval by the academic department. The credit hours may be applied to other undergraduate degree programs where applicable.

General University Requirements

You must earn at least 9 semester hours for an occupational endorsement. At least 30 percent of the program must be earned at UAF. A minimum GPA of 2.0 is required in all work as well as in your major field.

Unless otherwise specified by the appropriate academic unit, a course may be taken more than once toward fulfilling endorsement requirements. However, credit hours for such courses count only once toward total credits required for the endorsement.

Students seeking an occupational endorsement do not apply for graduation. Certifying that you have met all major requirements is the responsibility of your department faculty, who will notify the Office of Admissions and the Registrar.

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 the courses will not be accepted.

RESIDENCE CREDIT

Residence credit is course credit earned through any unit of UAF. Formal classroom instruction, correspondence study, distance-delivered courses, individual study or research at UAF are all considered residence credit. On the other hand, transfer credit, advanced placement credit, credit for prior learning, 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. None of these types of credit can be applied to UAF residency requirements.

RESIDENCY REQUIREMENT

Most universities have residency requirements that call for a certain number of credits toward a degree to be earned at the degree-granting school. At UAF, the residency requirement for occupational endorsements is 30 percent of the program.

Occupational Endorsement Requirements

In order to earn an occupational endorsement, students must be admitted to the program and complete the requirements listed in the program section of this chapter. A minimum of 9 credits is required to earn an occupational endorsement. At least 30 percent of the program must be completed in residence at UAF. Additional residency credit requirements may be established to meet discipline or accreditation standards.

You must have a cumulative GPA of at least 2.0 in all course work. Some occupational endorsement programs require higher GPAs.

Students may elect to complete their program under the requirements of the catalog in effect at the time of formal acceptance to an occupational endorsement program or the catalog in effect at the time of completion. If the requirements for the occupational endorsement are not met within five years of formal acceptance into the program, admission expires and the student must reapply for admission and meet the admission and program requirements in effect at the time of formal acceptance. Program requirements may require completion in less than five years.

Students may earn more than one occupational endorsement by completing all requirements for each additional program. Additional occupational endorsements must differ by 3 or more credits.

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Occupational Endorsement Programs

ADMINISTRATIVE ASSISTANT

College of Rural and Community Development
Business Technologies Division
Community and Technical College
907-455-2815
www.ctc.uaf.edu/programs/aaa/

Occupational Endorsement

Minimum Requirements for Occupational Endorsement: 16 credits

The administrative assistant occupational endorsement may be earned in one semester and represents a large portion of the course work required for the applied business management certificate. Students must complete all courses with a grade of C (2.0) or better and satisfactorily complete a two-week practicum at the culmination of training in order to earn the endorsement. This program is open to those who have completed the university application process and are at an appropriate English level for ABUS F170 Business English (as shown by English placement scores).

Occupational Endorsement Program

1. Complete the general university requirements (page 87).
2. Complete the occupational endorsement requirements (page 87).
3. Complete the following courses:*
   ABUS F102A—Keyboarding: Touch Typing (1)
   or ABUS F102C—Keyboarding: Document Formatting (1)..1
   ABUS F154—Human Relations.....3
   ABUS F170—Business English (3)
   or ABUS F271—Business Communications (3).....3
   ABUS F182—Office Procedures.....3
   ABUS F183—Advanced Job Readiness Skills.....2
   ABUS F199—Practicum in Applied Business.....1
   CIOS elective appropriate to skill level.....3
4. Minimum credits required.....16

* *Students must earn a C grade (2.0) or better in each course.*

BOOKKEEPING TECHNICIAN

College of Rural and Community Development
Community and Technical College
907-455-2809
www.ctc.uaf.edu/programs/abus/

Occupational Endorsement

Minimum Requirements for Occupational Endorsement: 15 credits

The bookkeeping technician occupational endorsement provides students with the education and training to qualify for bookkeeper positions in both small and large businesses. The occupational endorsement may be earned in one semester and represents one-half of the credits required for the accounting technician certificate. This program is open to students with a high school diploma or GED.

Occupational Endorsement Program

1. Complete the general university requirements (page 87).
2. Complete the occupational endorsement requirements (page 87).
3. Complete the following courses:*
   ABUS F101—Principles of Accounting I.....3
   ABUS F141—Payroll Accounting.....3
   ABUS F220—QuickBooks Accounting.....3
   ABUS F201—Principles of Accounting II.....3
   ABUS F142—Office Accounting.....3
4. Minimum credits required.....15

* *Students must earn a C grade (2.0) or better in each course.*

ENTRY LEVEL WELDER

College of Rural and Community Development
Community and Technical College
907-455-2809
www.ctc.uaf.edu/programs/weld/

Occupational Endorsement

Minimum Requirements for Occupational Endorsement: 21 credits

The entry level welder occupational endorsement provides training needed to succeed in the structural welding industry and to pass the American Welding Society test, used as an industry standard. The program also covers the safety requirements and mathematics needed in this high-demand occupation.

Occupational Endorsement Program

1. Complete the general university requirements (page 87).
2. Complete the occupational endorsement requirements (page 87).
3. Complete the following:*
   TTCH F131—Mathematics for the Trades.....3
   WMT F103—Welding I Fundamentals and Safety.....3
   WMT F105—Welding II Basic Welding.....3
   WMT F130—Shielded Metal Arc Welding.....3
   WMT F140—Metal Fabrication.....3
   WMT F160—Gas Metal Arc Welding.....3
   WMT F290—Welding Proficiency.....3
4. Minimum credits required.....21

* *Students must earn a C grade (2.0) or better in each course.*

FACILITY MAINTENANCE

College of Rural and Community Development
Interior-Aleutians Campus
907-474-2613
www.uaf.edu/rural/

Occupational Endorsement

Minimum Requirements for Occupational Endorsement: 12 Credits

The facility maintenance program trains participants in dealing with challenges unique to rural Alaskan structures. Training consists of identifying, troubleshooting and customizing solutions to a building or home, learning the importance of working with community advocates, tracking and analyzing past maintenance trends and developing strategies for future maintenance needs.

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Occupational Endorsement Program

1. Complete the general university requirements (page 87).
2. Complete the occupational endorsement requirements (page 87).
3. Complete the following:*
   - CTT F130—Introduction to Facilities Maintenance 1
   - CTT F131—Interior Repairs: Drywall, Woodwork Trim, Window Replacement 1
   - CTT F132—Flooring Installations: Vinyl, Wood and Parquet .. 1
   - CTT F133—Cabinet Installation with Countertops 1
   - CTT F135—Boiler Troubleshooting and Burner Repair 2
   - CTT F137—Appliance Troubleshooting and Repair 2
   - CTT F138—Troubleshooting HVAC Systems 2
   - CTT F151—Introduction to Plumbing Tools and Drawings 1
   - CTT F153—Plastic and Copper Pipe and Fittings 1
4. Minimum credits required 12

* *Students must earn a C grade (2.0) or better in each course.*

FINANCIAL SERVICES REPRESENTATIVE

College of Rural and Community Development
Business Technologies Division
Bristol Bay Campus 907-842-5109
Chukchi Campus 907-442-3400
Interior-Aleutians Campus 907-474-5439
Kuskokwim Campus 907-543-4500
Northwest Campus 907-443-2201
Community and Technical College 907-455-2800
www.ctc.uaf.edu/abus/

Occupational Endorsement

Minimum Requirements for Occupational Endorsement: 15 credits

The financial services representative program provides education and training to qualify students for customer service and teller positions in banks, credit unions and other financial institutions. This 15-credit occupational endorsement may be earned in one semester and represents half of the credits required for the applied business management certificate in finance. Upon completion of the course work, students may enroll in BA F253—Internship for an optional additional 1 – 3 credits and get practical work experience in a financial institution.

This program is open to students who can document a high school diploma or GED. In order to be hired in any financial institution graduates must be able to pass credit and criminal background checks.

Occupational Endorsement Program

1. Complete the general university requirements (page 87).
2. Complete the occupational endorsement requirements (page 87).
3. Complete the following courses*:
   - ABUS F120—Personal Finance and Investing 3
   - ABUS F160—Principles of Banking 3
   - ABUS F233—Financial Management 3
   - ABUS F155—Business Math (3) or MATH F100-level or above 3
   - ABUS F154—Human Relations (3) or ABUS F175—Customer Service 3
4. Minimum credits required 15

* *Students must earn a C grade (2.0) or better in each course.*

HEALTH, ALLIED

College of Rural and Community Development
Rural Health Programs
907-455-2050
http://ruralhealth.uaf.edu
Community and Technical College
907-455-2822
www.ctc.uaf.edu/programs/health/

Occupational Endorsement

Minimum Requirements for Endorsement: 9 – 13 credits

The occupational endorsements in allied health provide students with the knowledge and technical skills for employment in health care. Occupational endorsements are available in medical billing, medical coding, medical office reception and nurse aide.

Special admission, licensing, or certification requirements may apply to students in this program. Applicants should familiarize themselves with these and speak with a faculty advisor if they have any questions or concerns.

Medical Billing and Medical Coding

The occupational endorsements in medical billing and medical coding prepare students for employment in medical offices, clinics, hospitals and other medical facilities. Students in the program learn analysis of medical records and the assigning of codes for indexing diagnoses and procedures to provide information for reimbursement purposes.

Medical Office Reception

Students receive education in the theory and skills for both office work and clinical care. Prerequisites for the program include a high school diploma or GED.

Nurse Aide

The nurse aide occupational endorsement provides education and training to students in theory and basic nursing skills necessary to become efficient and productive health care team members. Students who successfully complete the program will be prepared to sit for the state of Alaska nurse aide examination for certification. This program is open to those who can document a high school diploma or GED and 10th grade reading level by exam or have the instructor's permission. Students must also be in good physical condition (capable of repeatedly lifting 50 pounds) and have the following immunizations: Hepatitis B full series, two MMRs, chickenpox vaccine (or titer to prove immunity to MMR/chickenpox) and have a negative PPD for tuberculosis within the past year.

Information on any of the Allied Health programs is available from the Allied Health Division at the Community and Technical College, PO Box 758040, Fairbanks, AK 99775; by calling 907-455-2822; by email at fyhealth@uaf.edu; or at www.ctc.uaf.edu/health/.

Medical Billing — Occupational Endorsement Program

1. Complete the general university requirements (page 87).
2. Complete the occupational endorsement requirements (page 87).
3. Complete the following:*
   - CIOS F150—Computer Business Applications (3) or documentation of computer skills and approved elective 3
   - HLTH F100—Medical Terminology 3
   - HLTH F236—Outpatient Health Care Reimbursement 3
   - HLTH F237—Inpatient Health Care Reimbursement 3
4. Minimum credits required 12

* *Students must earn a C grade (2.0) or better in each course.*

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Medical Coding — Occupational Endorsement Program

1. Complete the general university requirements (page 87).
2. Complete the occupational endorsement requirements (page 87).
3. Complete the following:*
   CIOS F150—Computer Business Applications (3)
   or documentation of computer skills and approved elective 3
   HLTH F100—Medical Terminology 3
   HLTH F208—Human Diseases 3
   HLTH F235—Medical Coding** 4
4. Minimum credits required 13

* *Students must earn a C grade (2.0) or better in each course.*
** *Must complete HLTH 235 with a B grade (3.0) or better.*

Medical Office Reception — Occupational Endorsement Program

1. Complete the general university requirements (page 87).
2. Complete the occupational endorsement requirements (page 87).
3. Complete the following:*
   CIOS F150—Computer Business Applications (3)
   or documentation of computer skills and approved elective 3
   HLTH F100—Medical Terminology 3
   HLTH F110—Professional Skills in the Workplace 2
   HLTH F118—Medical Law and Ethics 2
   HLTH F132—Administrative Procedures I 2
4. Minimum credits required 12

* *Students must earn a C grade (2.0) or better in each course.*

Nurse Aide — Occupational Endorsement Program

1. Complete the general university requirements (page 87).
2. Complete the occupational endorsement requirements (page 87).
3. Complete the following courses:
   HLTH F107—Nurse Aide Training (9)
   or HLTH F111 Personal Care Attendant Training (4)
   and HLTH F113—Personal Care Attendant to Nursing Assistant Bridge (5) 9
4. Minimum credits required 9

LAW ENFORCEMENT ACADEMY

College of Rural and Community Development
Community and Technical College
907-455-2823
www.ctc.uaf.edu/programs/lawacad/

Alaska Police Standards Council Certification

Minimum Requirements for Certification: 16 credits

The Law Enforcement Academy prepares students for a career in law enforcement in the state of Alaska. APSC certification will allow a qualified candidate to work as a commissioned officer in any of approximately 65 state and municipal law enforcement organizations.

The Law Enforcement Academy is an intense semester of full-time study. Students attend class 40 hours per week for one semester. The certification is approved by the Alaska Police Standards Council in compliance with Title 13.85.050 of the Alaska Administrative Code. Courses are not offered separately but must be taken as part of the entire Law Enforcement Academy package.

Special admission, licensing, or certification requirements may apply to students in this program. Applicants should familiarize themselves with these and speak with a faculty advisor if they have any questions or concerns.

Law Enforcement Certification by the Alaska Police Standards Council

1. Complete the following:
   LE F110—Cultural and Behavioral Strategies for Law Enforcement Officers 1
   LE F115—Enforcement Skills for Law Enforcement Officers ... 4
   LE F120—Law Enforcement Operations 4
   LE F125—Basic Police Procedures 3
   LE F205—Criminal Law for Police Officers 4
2. Minimum credits required 16

PARAMEDIC ACADEMY

College of Rural and Community Development
Community and Technical College
907-455-2895
www.ctc.uaf.edu/programs/paramedic/

The paramedic academy prepares students to take the national paramedic exam. A passing score qualifies students to apply for a paramedic license through the Alaska State Medical Board.

The paramedic academy offers the highest level of education available to prepare for work in the pre-hospital environment. The most common entry level positions for paramedics are in an ambulance within an emergency response system or in a non-emergency transport service. Paramedics also work in doctors' offices, urgent care clinics, hospital emergency rooms, intensive care units, laboratories, aeromedical transport services and safety departments in corporate and industrial settings.

UAF's paramedic academy offers an intensive three-semester course of full-time study. Students may apply their paramedic course credits to more advanced degrees including the A.A.S. in emergency services.

The paramedic academy meets or exceeds the national standards curriculum for the EMT-paramedic. During the first two semesters, the student will complete 500 hours of classroom education and 250 hours of clinical experience. The clinical component includes rotations in a hospital setting, including placements in the emergency room, respiratory therapy, operating room and intensive care unit. In the third semester the student will complete a field internship outside Alaska with an ambulance company supervised by paramedic field preceptors. During the internship the student is responsible for all costs of housing, travel and living expenses in addition to tuition and fees.

The paramedic student should be emotionally stable and have good dexterity, agility and physical coordination. Paramedics must also have the strength to lift and carry heavy loads.

Special admission, licensing or certification requirements may apply to students in this program. Applicants should familiarize themselves with these and speak to a faculty advisor if they have questions or concerns.

Admission Requirements

Application packets for the paramedic academy may be obtained from the Community and Technical College, call 907-455-2895 or email at cmkuhns@alaska.edu. Applications will be reviewed by CTC's Paramedic Academy Advisory Board. In keeping with certification requirements, class size is limited to 16 students. Completion of EMS F170—Emergency Medical Technician I (6 credits) is a prerequisite for the paramedic academy. Completion of HLTH F114—Fundamentals of Anatomy and Physiology (4 credits) is recommended.

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Academy Requirements

1. Complete the following:
   EMS F181—Clinical Rotation I 4
   EMS F183—Clinical Rotation II 4
   EMS F280—Paramedicine I 12
   EMS F282—Paramedicine II 12
   EMS F283—Paramedic Internship 12
2. Minimum credits required 44

RURAL HUMAN SERVICES

College of Rural and Community Development
Statewide Programs 907-474-5440
Chukchi Campus 907-442-3400
Interior-Aleutians Campus 907-474-5440
Kuskokwim Campus 907-543-4500
Northwest Campus 907-443-2201
www.uaf.edu/rhs/

Occupational Endorsement

Minimum Requirements for Occupational Endorsement: 16 Credits

The rural human services programs are designed to develop strong and healthy rural Alaska Native individuals, families and communities. They provide entry-level training for students preparing for careers as natural helpers/healers in village-based public, private and volunteer human service organizations. The curriculum draws extensively on resource people from the Native community and reflects a strong multicultural orientation that validates, incorporates and builds on Native values and principles.

The occupational endorsement is a concentrated course of study focused on rural behavioral health services which meets the training requirements for Behavioral Health Aide I credentials as developed by the Alaska Native Tribal Health Consortium. The endorsement can also serve as a "stepping stone" to the certificate. Both the Alaska Division of Behavioral Health and the Alaska Native Tribal Health Consortium are currently developing and defining competencies and credentials for Alaska behavioral health care workers. The occupational endorsement program directly parallels the entry level competencies training required under these new systems.

Admission is open to anyone employed by a regional Native health corporation or local entity providing village-based human services, or to individuals recognized by their communities as natural helpers/healers. A high school diploma or GED and/or previous training or work experience in the delivery of village-based human services are recommended but not required.

This program is delivered collaboratively within the UA system.

Occupational Endorsement Program

1. Complete the general university requirements (page 87).
2. Complete the occupational endorsement requirements (page 87).
3. Complete the following:
   RHS F110—Cross Cultural Bridging 1
   RHS F115—Issues of Personal Development 1
   RHS F120—Family Systems I 2
   RHS F130—Processes of Community Change 2
   RHS F140—Alaska Native Values and Principles 1
   RHS F150—Introduction to Rural Counseling 2
   RHS F260—Addictions: Intervention and Treatment 2
   RHS F275—Introduction to Mental Health Recovery 2
   RHS F285—Case Management 2
4. Minimum credits required 16

Note: See your advisor if you are not sure which catalog year to use.

RURAL NUTRITION SERVICES

College of Rural and Community Development
Interior-Aleutians Campus
907-474-6080
www.uaf.edu/iac/

Occupational Endorsement

Minimum Requirements for Occupational Endorsement: 12 credits

The Rural Nutrition Services Program teaches job-related skills and knowledge needed for entry-level employment in a wide range of nutrition-related positions in health care, education, local government and other organizations serving rural Alaska. Students learn nutrition science, behavioral health as it relates to nutrition, Alaska Native knowledge and traditions related to wellness and skills for sharing the information with individuals, groups and communities. Courses are taught within the context of the unique realities of rural Alaskan community food systems.

Occupational Endorsement Program

1. Complete the general university requirements (page 87).
2. Complete the occupational endorsement requirements (page 87).
3. Complete the following:*
   RNS F105—Nutritional Science for the Generations 3
   RNS F120—Alaska Native Food Systems 3
   RNS F201—Community Nutrition Interventions 2
   RNS F210—Introduction to Rural Nutrition Counseling 2
   RNS F260—Rural Nutrition Practicum ..... 2 – 3
4. Minimum credits required 12

* *Students must earn a C grade (2.0) or better in each course.*

RURAL UTILITY BUSINESS MANAGEMENT

College of Rural and Community Development
Division of Rural and Economic Development
Interior-Aleutians Campus
907-474-5439
www.uaf.edu/rural/

Occupational Endorsement

Minimum Requirements for Occupational Endorsement: 12 credits

The occupational endorsement in rural utility business management provides education and training in theory and skills necessary for the sustained operation of rural water and waste-water utilities. The program is open to all individuals who wish to apply with the recommendation that they have a high school diploma or GED. It is designed to serve the needs of rural Alaskans who are employed by a rural sanitation utility, or nominated by any of the following: a rural sanitation utility, state of Alaska RUBM program manager or Alaska Native tribal health corporation.

Occupational Endorsement Program

1. Complete the general university requirements (page 87).
2. Complete the occupational endorsement requirements (page 87).
3. Complete the following:*
   TM F130—Introduction to Utility Management 2
   TM F131—Organizational Management for Utilities 2
   TM F132—Operations Management for Utilities 2
   TM F134—Financial Management for Utilities 2
   TM F136—Personnel Management for Utilities 2
   TM F138—Planning for Utilities 2
4. Minimum credits required 12

* *Students must earn a C grade (2.0) or better in each course.*

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CERTIFICATES & ASSOCIATE

Certificates *and* Associate Degrees

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General University Requirements 93

Types of Certificates and Associate Degrees 95

Certificate Requirements 95

General Associate Degree Requirements 96

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Associate of Science Requirements 97

Certificate and Associate Degree Programs 99

Community and Technical College auto shop instructor Travis Cortez, right, works with students in the auto shop on Industrial Avenue, in Fairbanks.

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How to Earn a Certificate or Associate Degree

To earn a UAF degree, you must satisfy three sets of requirements: general university requirements; certificate or degree requirements; and program (major) requirements. These requirements are all described in this section of the catalog. Requirements for your major are found in the Certificate and Associate Degree Programs section, beginning on page 99.

If your degree program is delivered collaboratively within the UA system (e.g., information technology specialist, early childhood education, human services and rural human services), then the credits you earn from each UA institution will be counted toward fulfillment of the degree requirements and fulfillment of the minimum institutional residency requirements. Institutional residency requirements are the minimum number of credits you must earn from the campus where you earn a degree.

General University Requirements

You must earn at least 30 semester hours for a certificate and 60 semester hours for an associate degree, including transfer credits. At least 15 semester credits applicable to any certificate or associate degree must be earned at UAF. A minimum GPA of 2.0 is required in all work as well as in your major field. In addition, you must earn a minimum C grade (2.0) in courses required for your associate degree major.

Unless otherwise specified by the appropriate academic unit, a course may be taken more than once toward fulfilling degree, certificate or major requirements. However, credit hours for such courses count only once toward total credits required for the degree or certificate.

Once you have applied for graduation, certifying that you have met all major requirements is the responsibility of your academic advisor, who will notify the Office of Admissions and the Registrar.

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 the courses will not be accepted.

MAJORS

You may declare a major when you are admitted to UAF as a degree-seeking undergraduate student. If you haven't chosen a major, you'll be enrolled as a general studies student. Non-degree students are not eligible to declare a major, be assigned class standing or receive financial aid.

Students enrolled in associate degree or certificate programs who want to declare a bachelor's degree major must apply for admission to a degree program following the standard admission process for bachelor's degree programs. (See admission requirements in How to Earn a Bachelor's Degree.)

TABLE 18 **GENERAL UNIVERSITY REQUIREMENTS FOR CERTIFICATES AND ASSOCIATE DEGREES**

	Certificate	Associate Degree
Minimum number of credits required	30 credits	60 credits
Credits that must be earned at UAF (residence credit)	15 credits	15 credits
Grade point average required	2.0 cumulative and in major	2.0 cumulative and in major
Minimum grades required for major		No grade lower than C (2.0) in courses required for major
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; five-year limit on catalog year	May use any catalog in effect when enrolled as a degree-seeking student, regardless of major; five-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 degree must be met

- **Changing your Major**
  Undergraduate students may change majors by completing a change of major form available from the Office of Admissions and the Registrar or at www.uaf.edu/reg/. A change of major becomes effective for the following semester after it is submitted. Students who wish to change majors from one level to another level (i.e. from an associate degree to a bachelor's degree) must contact the Office of Admissions and the Registrar to apply for a level change.

CONCENTRATIONS

An area of emphasis, including the major core courses within a student's degree program, is termed a concentration. Some programs at UAF require a concentration, others do not. A student may only earn one degree in a specific discipline once. Using different concentrations within a degree program to count as different degrees is not allowed.

SECOND ASSOCIATE DEGREE

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 complete all requirements for the major. As long as you have completed the additional 12-hour

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requirement, you may be awarded two degrees in one semester.

DEGREE REQUIREMENTS AND TIME LIMITS

You may complete degree requirements in effect and published in the UAF catalog in any one of the previous five academic years in which you are enrolled as a degree student for a certificate or associate degree. You are considered enrolled in your degree program when you complete the appropriate degree-seeking 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.

EXCEPTIONS TO DEGREE REQUIREMENTS

Occasionally an undergraduate student may request an exception to an academic requirement or regulation. Requests for an academic dispensation must be approved by petition. If you submit a petition on the basis of a disability, the coordinator of disability services will be consulted. The Undergraduate Petition Form forms is available online at www.uaf.edu/reg/forms/. Forms need to be returned to the Office of Admissions and the Registrar with required approval signatures. The Office of Admissions and the Registrar will post the petition information on Degree Works and notify you once a decision on your petition has been received. Academic petitions fall into three categories and each involve different processes:

- **Core Curriculum Petitions**
  If your petition deals with baccalaureate core requirements, your advisor and the head of the department of the academic area involved must grant approval. Submit your signed petition to the Office of Admissions and the Registrar. It will then be forwarded to the chair of the faculty senate core curriculum review committee for consideration.
- **Major or Minor Degree Requirement Petitions**
  If you want to waive or substitute courses within your major or minor requirements, you need approval signatures from your advisor and the department or program head of your major or minor area. Submit your signed petition to the Office of Admissions and the Registrar.
- **Petitions for Other Requirements**
  If your petition deals with general university and/or specific requirements for your degree or other academic policies, you need approval from your advisor and the dean or director of the college or school in which your major is located. Submit your signed petition to the Office of Admissions and the Registrar. It will then be forwarded to the UAF provost for consideration.

RESIDENCE CREDIT

Residence credit is course credit earned through any unit of UAF. Formal classroom instruction, correspondence study, distance-delivered courses, individual study or research at UAF are all considered residence credit. On the other hand, transfer credit, advanced placement credit, credit for prior learning, 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. None of these types of credit can be applied to UAF residency requirements.

RESIDENCY REQUIREMENT

Most universities have residency requirements that call for a certain number of credits toward a degree to be earned at the degree-granting school. At UAF, the residency requirement for both certificates and associate degrees is 15 resident credits.

GRADUATION

- **Responsibility**
  You are responsible for meeting all requirements for graduation. You are encouraged to work with your advisor and use DegreeWorks throughout your college career to ensure you are on track to graduate.
- **Application for Graduation**
  You need to formally apply for graduation. An application for graduation and non-refundable fee must be filed with the Office of Admissions and the Registrar. We encourage you to apply the semester prior to the semester you plan to graduate. If you file your application by the published deadline, the graduation application fee is $50. If you miss that deadline, you can submit a late application for graduation by the published late graduation deadline for the semester. The fee for a late application is $80. Applications for graduation filed after the late deadline are processed for graduation the following semester. Students who apply for graduation and who do not complete degree requirements by the end of the semester must reapply for graduation and repay the fee.
- **Diplomas and Commencement**
  UAF issues diplomas to graduates three times a year: in September following summer sessions, in January at the end of fall semester and in May at the end of spring semester. Students who complete degree requirements for UA Board of Regents-approved academic programs during the academic year are invited to participate in the annual commencement ceremony at the end of spring semester.

  Names of students receiving degrees/certificates appear in the commencement program and are released to the media unless you submit a written request not to do so to the Office of Admissions and the Registrar. Graduates are responsible for ordering caps and gowns through the UAF bookstore in early spring.
- **Graduation with Honors**
  Graduation with honors is a tribute that recognizes academic achievement. Honors graduates have earned a cumulative GPA of 3.5 or higher in all college work. If a student's overall cumulative GPA is 3.5 or higher, a student graduates with the distinction of cum laude; 3.75 or higher, magna cum laude; 3.9 or higher and no grade lower than A-, summa cum laude. Your cumulative GPA

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for graduation with honors is based on all college work attempted at UAF, including any repeated or omitted credits due to Fresh Start/academic bankruptcy.

For transfer students to be considered for graduation with honors, they must have:

- 3.5 cumulative GPA in all attempted UAF credits, and
- UAF residence credit of 24 semester hours for an associate degree.

Once those requirements are met, a cumulative GPA is calculated combining all college work attempted at UAF, as well as all college work attempted at any other institutions you've attended, including repeated credits and any credits that may not have been accepted for transfer to UAF. The combined cumulative GPA must also be 3.5 or higher for a transfer student to graduate with honors.

Types of Certificates and Associate Degrees

- **Certificate Programs**
  Certificate programs are designed for students who are preparing for entry-level employment or upgrading in a specific occupation.
- **Associate of Science**
  The A.S. degree represents the completion of a broad-based course of study with an emphasis in the sciences. This degree may serve as a stepping-stone to a science-related baccalaureate program. You may earn only one A.S. degree.
- **Associate of Arts**
  The A.A. is a program of study with an interdisciplinary approach useful for transferring to future degree programs or as a starting point for a career. An emphasis created in an A.A. program can fulfill general education requirements or become the basis for a minor in many bachelor's programs. The A.A. degree is offered at all UAF campuses as well as online. Students may only earn one A.A.
- **Associate of Applied Science**
  The A.A.S. is intended for students who are preparing for entry-level employment or upgrading in a specific occupation. This degree is not intended for transfer into a four-year degree program. However, some courses within the A.A.S. degree may be accepted in a four-year bachelor's program (each course is considered on an individual basis).

Certificate Requirements

Certificate programs vary in length; however, you can usually complete them in one year. Certificates are awarded in specific occupational fields with emphasis on entering the job market. These certificates can serve as the basis for additional education and are the first step toward an associate of applied science (A.A.S.) degree. For specific major requirements, refer to the degrees and programs section.

If your degree program is delivered collaboratively within the UA system, credits you earn from each UA institution will be counted toward fulfillment of the degree requirements and fulfillment of the minimum institutional residency requirements.

You may enroll in any course for which you are eligible. To earn a certificate, you must formally be admitted to a certificate program and you must earn at least 30 credits, including transfer credit. Fifteen semester hours must be residence credits. You must have a cumulative GPA of at least 2.0 in all course work, as well as in your major. Programs of study for which certificates are granted must contain a recognizable body of instruction in the program-related areas of communication, computation and human relations.

Additional appropriate topics may include safety, industrial safety and environmental awareness. Instruction in the related instructional areas may be embedded within the program curriculum or taught in blocks of specialized instruction. Each approach, however, will have clearly identified content that is pertinent to the general program of study.

Note: Students planning to go on to a bachelor's degree need to work closely with their advisors and are encouraged to select courses meeting core requirements and courses designated within majors and minors. Only those courses with an "X" designator count toward the baccalaureate core.

Requirements	**Credits**
Communication	**2 – 3**

Complete one of the following:
- ENGL F111X—Introduction to Academic Writing (3)
- ABUS F170—Business English (3)
- ABUS F271—Business Communications (3)
- ENGL F211X—Academic Writing about Literature (3)
- ENGL F212—Business, Grant and Report Writing* (3)
- ENGL F213X—Academic Writing about the Social and Natural Sciences (3)
- COMM F131X—Fundamentals of Oral Communication: Group Context (3)
- COMM F141X—Fundamentals of Oral Communication: Public Context (3) or successful completion of competency test
- DEVS F104—University Communications (1 – 3)
- DEVS F105—Intensive Reading Development (3)
- Other program-approved discipline-based communication course or discipline-based courses with embedded communication content. (2 – 3)

** ENGL F212 does not fulfill the second half of the written communication requirement for the bachelor's degree.*

Computation	**2 – 3**

Complete one of the following:
- Any course at the F100-level or above in mathematical sciences (computer science, math or statistics). (3)
- ABUS F155—Business Math (3)
- DEVM F105—Intermediate Algebra (3)
- ECE F117—Math Skills for Early Childhood Educators (3)
- HLTH F116—Mathematics in Health Care (3)
- HUMS F117—Math Skills for Human Services (3)
- PRT F155—Mathematics for Technicians (3)
- TTCH F131—Mathematics for the Trades (3)
- Other program-approved discipline-based computation course or discipline-based courses with embedded computation content. (2 – 3)

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Human Relations **2 – 3**

Complete one of the following:
- ANTH F100X/SOC F100X—Individual, Society and Culture (3)
- ABUS F154—Human Relations (3)
- ANL F287—Teaching Methods for Alaska Native Languages (3)
- ECE F245—Child Development (3)
- ED/PSY F245—Child Development (3)
- HLTH F106—Human Behavior in Health Care (3)
- HUMS F120—Cultural Diversity in Human Services (3)
- RHS F110—Cross-Cultural Bridging Skills (1) AND RHS F115—Issues of Personal Development (2)
- Other program-approved discipline-based human relations or discipline-based courses with embedded human relations content. (2 – 3)

Major specialty **at least 21**

Electives to total **30**

General Associate Degree Requirements

You must have completed at least 60 semester hours, including transfer credits, to earn a UAF associate degree.

At least 15 credits applicable to any associate degree must be UAF resident credits.

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 stepping-stone to a bachelor's program. You may earn only one A.A. degree.

The curriculum of the associate of arts degree consists of all courses required to meet the University of Alaska Fairbanks baccalaureate core, with the following exceptions:

1. The upper division writing and oral intensive courses are not required
2. In place of the upper division ethics course a humanities or social science elective may be substituted.

All credits for the A.A. degree must be at the F100-level or above with 20 credits at the F200-level or above, and be distributed as follows:

Baccalaureate core credits.....38 – 44
General electives.....16 – 22

Requirements **Credits**

Communication **9**

- ENGL F111X—Introduction to Academic Writing (3)
  ENGL F190H may be substituted.

Complete one of the following:
- ENGL F211X—Academic Writing about Literature (3)
- ENGL F213X—Academic Writing about the Social and Natural Sciences (3)

Complete one of the following:
- COMM F131X—Fundamentals of Oral Communication: Group Context (3)
- COMM F141X—Fundamentals of Oral Communication: Public Context (3) or successful completion of competency test

Perspectives on the Human Condition *(humanities and social sciences)* **18**

Complete all of the following four courses:
- ANTH F100X/SOC F100X—Individual, Society and Culture (3)
- ECON F100X or PS F100X—Political Economy (3)
- HIST F100X—Modern World History (3)
- ENGL/FL F200X—World Literature (3) 12

Complete one of the following three courses:
- ART/MUS/THR F200X—Aesthetic Appreciation: Interrelationship of Art, Drama and Music (3)
- HUM F201X—Unity in the Arts (3)
- ANS F202X—Aesthetic Appreciation of Alaskan Native Performance (3) 3

Complete one of the following six courses:
- BA F323X—Business Ethics (3)
- COMM F300X—Communicating Ethics (3)
- JUST F300X—Ethics and Justice (3)
- NRM F303X—Environmental Ethics and Actions (3)
- PS F300X—Ethics and Society (3)
- PHIL F322X—Ethics (3) 3

Note: Recommended for students who will earn a B.A. or B.S. degree. An additional social science elective may be substituted for the A.A. degree.

Or complete 12 credits from the above courses plus one of the following:
- Two semester-length courses in a single Alaska Native language or other non-English language
- Three semester-length courses (9 credits) in American Sign Language taken at the university level. 6 – 9

Mathematics **3**

Complete one of the following:
- MATH F103X—Concepts and Contemporary Applications of Mathematics (3)
- MATH F107X—Functions for Calculus* (4)
- MATH F161X—Algebra for Business and Economics* (3)
- STAT F200X—Elementary Probability and Statistics (3)

** No credit may be earned for more than one of MATH F107X or F161X.*

Or complete one of the following:*
- MATH F200X—Calculus I** (4)
- MATH F201X—Calculus II (4)
- MATH F202X—Calculus III (4)
- MATH F262X—Calculus for Business and Economics** (4)
- MATH F272X—Calculus for Life Sciences** (4) 3 – 4

** Or any math course having one of these as a prerequisite*

***No credit may be earned for more than one of MATH F200X, MATH F262X or MATH F272X*

Natural Sciences **8**

Complete any two (4-credit) courses.
- ATM F101X—Weather and Climate of Alaska (4)
- BIOL F100X—Human Biology (4)
- BIOL F103X—Biology and Society (4)
- BIOL F104X—Natural History (4)
- BIOL F111X—Human Anatomy and Physiology I (4)
- BIOL F112X—Human Anatomy and Physiology II (4)
- BIOL F115X—Fundamentals of Biology I (4)
- BIOL F116X—Fundamentals of Biology II (4)
- CHEM F100X—Chemistry in Complex Systems (4)
- CHEM F103X—Basic General Chemistry (4)
- CHEM F104X—Beginnings in Biochemistry (4)
- CHEM F105X—General Chemistry (4)
- CHEM F106X—General Chemistry (4)
- GEOG F111X—Earth and Environment: Elements of Physical Geography (4)
- GEOS F100X—Introduction to Earth Science (4)
- GEOS F101X—The Dynamic Earth (4)
- GEOS F106X—Life in the Age of the Dinosaurs (4)
- GEOS F112X—History of Earth and Life (4)
- GEOS F120X—Glaciers, Earthquakes and Volcanoes (4)

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- GEOS F125X—Humans, Earth and Environment (4)
- MSL F111X—The Oceans (4)
- PHYS F102X—Energy and Society (4)
- PHYS F103X—College Physics (4)
- PHYS F104X—College Physics (4)
- PHYS F115X—Physical Science I (4)
- PHYS F116X—Physical Science II (4)
- PHYS F175X—Astronomy (4)
- PHYS F211X—General Physics (4)
- PHYS F212X—General Physics (4)
- PHYS F213X—Elementary Modern Physics (4) 8

Library and Information Research **0 – 1**

Successful completion of library skills competency test or LS F100X or F101X 0 – 1

Total credits required **38 – 39**

Students planning to go on to the bachelor's degree are advised to select courses meeting remaining core requirements and courses designated within bachelor's degree majors and minors.

Minimum credits required for degree **60**

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 education. For specific major requirements, see the Certificate and Associate Degree Programs section beginning on page 99.

Note: Students planning to go on to a bachelor's degree need to work closely with their advisors and are encouraged to select courses meeting core requirements and courses designated within majors and minors. Only courses with an "X" designator count towards the baccalaureate core.

All credits for the A.A.S. degree must be at the F100-level or above and be distributed as follows:

Requirements	**Credits**
Communication	**9**
Written Communication	**6**

ENGL F111X—Introduction to Academic Writing (3)

Complete one of the following:
- ABUS F271—Business Communications (3)
- ENGL F211X—Academic Writing about Literature (3)
- ENGL F212—Business, Grant and Report Writing* (3)
- ENGL F213X—Academic Writing about the Social and Natural Sciences (3)

* *ENGL F212 does not fulfill the second half of the written communication requirement for the bachelor's degree.*

Oral Communication **3**

Complete one of the following:
- COMM F131X—Fundamentals of Oral Communication: Group Context (3)
- COMM F141X—Fundamentals of Oral Communication: Public Context (3) or successful completion of competency test

Computation **3**

Complete one of the following:
- Any course at the F100-level or above in mathematical sciences (computer science, math or statistics. (3)
- ABUS F155—Business Math (3)
- DEVM F105—Intermediate Algebra (3)
- ECE F117—Math Skills for Early Childhood Educators (3)
- HLTH F116—Mathematics in Health Care (3)
- HUMS F117—Math Skills for Human Services (3)
- PRT F155—Mathematics for Technicians (3)
- TTCH F131—Mathematics for the Trades (3)
- other program-approved discipline-based computation course or discipline-based courses with embedded computation content. (3)

Human Relations **3**

Complete one of the following:
- ANTH F100X/SOC F100X—Individual, Society and Culture (3)
- ABUS F154—Human Relations (3)
- ANL F287—Teaching Methods for Alaska Native Languages (3)
- ECE F245—Child Development (3)
- ED/PSY F245—Childhood Development (3)
- HUMS F120—Cultural Diversity in Human Services (3)
- RHS F110—Cross-Cultural Bridging Skills (1) AND RHS F115—Issues of Personal Development (2)
- HLTH F106—Human Behavior in Health Care (3)
- other program-approved discipline-based human relations course or discipline-based courses with embedded human relations content. (3)

Major specialty **at least 30**

Electives to total **60**

Minimum credits required for degree **60**

Associate of Science Requirements

The associate of science degree represents the completion of a broad-based course of study with an emphasis in the sciences. This degree may serve as a stepping-stone to a science-related baccalaureate program. You may earn only one A.S. degree.

Requirements	**Credits**
Communication	**9**

- ENGL F111X—Introduction to Academic Writing (3)
- ENGL F213X—Academic Writing about the Social and Natural Sciences (3)

Complete one of the following:
- COMM F131X—Fundamentals of Oral Communication: Group Context (3)
- COMM F141X—Fundamentals of Oral Communication: Public Context (3) or successful completion of competency test

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Humanities and Social Sciences	15

Complete all of the following:
- ANTH F100X/SOC F100X—Individual, Society and Culture (3)
- ECON F100X OR PS F100X—Political Economy (3)
- HIST F100X—Modern World History (3)
- ENGL/FL F200X—World Literature (3)

Complete one of the following:
- ART/MUS/THR F200X—Aesthetic Appreciation: Interrelationship of Art, Drama and Music (3)
- HUM F201X—Unity in the Arts (3)
- ANS F202X—Aesthetic Appreciation of Alaskan Native Performance (3)

Or complete 12 credits from the above courses plus one of the following:
- Two semester-length courses in a single Alaska Native language or other non-English language
- Three semester-length courses (9 credits) in American Sign Language.

Mathematics	4

- MATH F107X—Functions for Calculus (4)*

Or complete one of the following:
- MATH F200X—Calculus I (4)
- MATH F272X—Calculus for Life Sciences (4)

** No credit may be earned for more than one of MATH F107X or F161X.*

Natural Sciences	16 Complete any two (4-credit) courses.

- ATM F101X—Weather and Climate of Alaska (4)
- BIOL F100X—Human Biology (4)
- BIOL F103X—Biology and Society (4)
- BIOL F104X—Natural History (4)
- BIOL F111X—Human Anatomy and Physiology I (4)
- BIOL F112X—Human Anatomy and Physiology II (4)
- BIOL F115X—Fundamentals of Biology I (4)
- BIOL F116X—Fundamentals of Biology II (4)
- CHEM F100X—Chemistry in Complex Systems (4)
- CHEM F103X—Basic General Chemistry (4)
- CHEM F104X—Beginnings in Biochemistry (4)
- CHEM F105X—General Chemistry (4)
- CHEM F106X—General Chemistry (4)
- GEOG F111X—Earth and Environment: Elements of Physical Geography (4)
- GEOS F100X—Introduction to Earth Science (4)
- GEOS F101X—The Dynamic Earth (4)
- GEOS F106X—Life in the Age of the Dinosaurs (4)
- GEOS F112X—History of Earth and Life (4)
- GEOS F120X—Glaciers, Earthquakes and Volcanoes (4)
- GEOS F125X—Humans, Earth and Environment (4)
- MSL F111X—The Oceans (4)
- PHYS F102X—Energy and Society (4)
- PHYS F103X—College Physics (4)
- PHYS F104X—College Physics (4)
- PHYS F115X—Physical Science I (4)
- PHYS F116X—Physical Science II (4)
- PHYS F175X—Astronomy (4)
- PHYS F211X—General Physics (4)
- PHYS F212X—General Physics (4)
- PHYS F213X—Elementary Modern Physics (4)

Complete a one-year sequence in one natural science beyond the baccalaureate core. The total courses used to satisfy this requirement shall represent at least two different natural sciences.

Library and Information Research	0-1

- Successful completion of library skills competency test or LS F100X OR F101X

Concentration specialty	at least 15

Minimum credits required for degree	60

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Certificate and Associate Degree Programs

ACCOUNTING, APPLIED

College of Rural and Community Development
Department of Applied Business, Paralegal and Accounting
Community and Technical College 907-455-2800
www.ctc.uaf.edu/programs/abus/accounting.html

A.A.S. Degree

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

The applied accounting program prepares students for entry- and mid-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.

Courses in the applied accounting program address the concerns of modern business people and provide the training necessary to enhance business success. The applied accounting program prepares a student to enter the UAF School of Management's B.B.A. program in accounting in order to earn the 150 credits required to take the CPA exam in Alaska.

Students entering the A.A.S. program are expected to have basic computer skills equivalent to CIOS F150. Classes are scheduled during the day, in the evening and online to accommodate working students. Microcomputer and office technology labs are available for hands-on training.

Major — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements. (See page 97. As part of the A.A.S. degree requirements, it is recommended that students complete ABUS F154 for the human relations requirement. ABUS F155 is the recommended computation course.)
3. Complete the following program (major) requirements:*
   - ABUS F101—Principles of Accounting I 3
   - ABUS F141—Payroll Accounting 3
   - ABUS F175—Customer Service (3) or ABUS F179—Fundamentals of Supervision (3) 3
   - ABUS F201—Principles of Accounting II 3
   - ABUS F202—Principles of Accounting III 3
   - ABUS F203—Accounting Capstone 3
   - ABUS F210—Income Tax 3
   - ABUS F221—Microcomputer Accounting (3) or ABUS F220—Microcomputer Accounting: QuickBooks (3) 3
   - ABUS F233—Financial Management 3
   - ABUS F235—Fund Accounting for Non-Profits (3) or ABUS F160—Principles of Banking (3) 3
   - BA F151—Introduction to Business 3
   - CIOS F135—Microcomputer Spreadsheets (3) or CIOS F240—Microcomputer Databases (3) 3
   - Department-recommended electives 9
4. Minimum credits required 60

* *Students must earn a C grade (2.0) or better in each course.*

Minor

1. Complete the following:
   - ABUS F101—Principles of Accounting I 3
   - ABUS F201—Principles of Accounting II (3) or ABUS F235—Fund Accounting for Non-Profits (3) 3
   - ABUS F210—Income Tax 3
   - ABUS F220—Microcomputer Accounting: QuickBooks (3) or ABUS F221—Microcomputer Accounting (3) 3
   - BA F151—Introduction to Business 3
   - CIOS F135—Microcomputer Spreadsheets (3) or CIOS F240—Microcomputer Databases (3) 3
2. Minimum credits required 18

ACCOUNTING TECHNICIAN

College of Rural and Community Development
Department of Applied Business, Paralegal and Accounting
Community and Technical College 907-455-2800
www.ctc.uaf.edu/programs/abus/accounting.html

Certificate

Minimum Requirements for Certificate: 30 credits

The accounting technician 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.

Courses in this program address the concerns of modern business people and provide the training necessary to enhance business success. The accounting technician certificate represents the first year of training toward the applied accounting A.A.S. degree. Students admitted into the accounting B.B.A. degree program may apply their earned certificate credits toward the state of Alaska's 150 hour requirement for a CPA license.

Students entering the certificate program are expected to have basic computer skills equivalent to CIOS F150. Classes are scheduled in the evening to accommodate working students. Microcomputer and office technology labs are available for hands-on training.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the following certificate requirements:
   a. Complete one of the following communication courses:
      - ABUS F170—Business English (3) or ABUS F271—Business Communications (3) or ENGL F111X—Introduction to Academic Writing (3) or ENGL F212—Business, Grant, and Report Writing (3) 3
   b. Complete one of the following computation courses:
      - ABUS F155—Business Math (3) or MATH at the 100-level or above 3
   c. Complete the following human relations course:
      - ABUS F154—Human Relations (3) or other approved human relations course 3
3. Complete the following program (major) requirements.
   - ABUS F101—Principles of Accounting I 3
   - ABUS F141—Payroll Accounting 3
   - ABUS F201—Principles of Accounting II (3) or ABUS F235—Fund Accounting for Non-Profits (3) 3

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ABUS F203—Accounting Capstone 3
ABUS F210—Income Tax 3
ABUS F220—Microcomputer Accounting: QuickBooks (3)
or ABUS F221—Microcomputer Accounting (3) 3
BA F151—Introduction to Business 3

4. Minimum credits required 30

APPRENTICESHIP TECHNOLOGIES

College of Rural and Community Development
Bristol Bay Campus 907-842-5109
Chukchi Campus 907-442-3400
Interior-Aleutians Campus 907-474-5439
Kuskokwim Campus 907-543-4500
Northwest Campus 907-443-2201
Community and Technical College 907-455-2800
www.uaf.edu/rural/

A.A.S. Degree

Minimum Requirements for Degree: 60 credits

The A.A.S. degree in apprenticeship technologies provides career and technical training and supporting course work to prepare students for the rapidly changing global workplace. The program also helps Alaska industries by training workers who can meet increasing certification requirements which reflect complex business and industrial standards.

The apprenticeship technologies program is a 60-credit A.A.S. degree delivered collaboratively through UAA, UAF and UAS. The practical integration of general course work and training for vocational-technical trades specifically reflects the commitment of the university to high-quality instruction and public service. Individuals earning this degree must complete a formal apprenticeship program and hold journey-level status in trades or occupations (including occupational license or occupational certificate) recognized by the U.S. Department of Labor, Office of Apprenticeship and Training.

Students declaring a major in apprenticeship technologies must present documentation of acceptance into an apprenticeship program meeting the requirements of the U.S. Department of Labor, Bureau of Apprenticeship and Training. The appropriate College of Rural and Community Development campus will review the documentation and may recommend up to 38 credits of course work following completion of all courses listed below. Students are encouraged to begin the required courses while completing the apprenticeship program to expand the quality and breadth of the program. Students who complete this program may be eligible to enroll in the B.S. technology degree program at UAA or the B.T. degree program at UAF.

Major — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97). As part of the A.A.S. degree requirements, complete:
   ENGL F111X—Introduction to Academic Writing 3
   ENGL F212—Business, Grant and Report Writing 3
   COMM F131X—Fundamentals of Oral Communication: Group Context (3)
   or COMM F141X—Fundamentals of Oral Communication: Public Context (3) 3
   STAT F200X—Elementary Probability and Statistics (3)
   or DEVM F105—Intermediate Algebra (3)
   or any MATH course at the 100-level or higher (3) 3
   ABUS F154 or ANTH F100X or SOC F100X.....3
3. Complete 6 credits of safety, computer, business, technical, or other advisor-approved courses linked to an identified education or career pathway.....6
4. Approved apprenticeship program transfer of credit maximum.....38
5. Electives to complete 60 credits as needed.
6. Minimum credits required 60

ASSOCIATE OF ARTS

College of Rural and Community Development
Bristol Bay Campus 907-842-5109
Chukchi Campus 907-442-3400
Interior-Aleutians Campus 907-474-5439
Kuskokwim Campus 907-543-4500
Northwest Campus 907-443-2201
Community and Technical College 907-455-2800
www.ctc.uaf.edu/programs/aa/

A.A. Degree

Minimum Requirements for Degree: 60 credits

The associate of arts degree is offered at all UAF campuses. The degree offers a rigorous program of study for the serious student who eventually intends to transfer to a bachelor's degree program. The degree may serve as a starting point for a career or as a stepping-stone to a bachelor's program. You may only earn one A.A. degree.

Major — A.A. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A. degree requirements (page 96).
3. Minimum credits required 60

ASSOCIATE OF SCIENCE

College of Rural and Community Development
Interior-Aleutians Campus
907-474-5439
www.uaf.edu/iac/

A.S. Degree

Minimum Requirements for Degree: 60 credits

The associate of science degree represents the completion of a broad-based course of study with an emphasis in the sciences. This degree may serve as a stepping-stone to a science-related baccalaureate program. You may earn only one A.S. degree.

Major — A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.S. degree requirements (page 97).
3. Complete concentration area of at least 15 credits from a science-focused area of study in natural sciences, mathematics, statistics, engineering, computer science or from a bachelor of science degree area as determined in coordination with your advisor*.....15
4. Minimum credits required 60

* *All credits for the A.S. degree must be at the 100-level or above with 20 credits at the 200-level or above. Variation in credits depends on the concentration area.*

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AUTOMOTIVE TECHNOLOGY

College of Rural and Community Development
Community and Technical College
907-455-2809
www.ctc.uaf.edu/programs/Automotive/

Certificate

Minimum Requirements for Certificate: 34 credits

The automotive technology program provides students with the education and training needed to become an entry-level automotive technician. The automotive service industry is constantly changing as cars become more complicated. Highly trained technicians are needed to understand, diagnose and repair modern automobiles.

The 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 adjustments to the complex systems that make up today's cars. The certificate training qualifies students for entry-level positions within the automotive service and repair industry in the areas of electricity/electronics, brakes, suspension and alignment, and engine performance.

Successful graduates from the automotive technology program go on to careers in dealerships, independent shops, service/IM stations, fleet repair facilities and aviation ground support. Salaries vary depending on job placement and the student's skill level.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements. (See page 95. As part of the certificate requirements, the communication, computation and human relations content are embedded in the major required courses for this program).
3. Complete the following program (major) requirements:*
   AUTO F102—Introduction to Automotive Technology.....3
   AUTO F110—Basic Electrical Systems.....3
   AUTO F122—Engine Theory and Diagnosis 3
   AUTO F131—Automotive Electrical II 3
   AUTO F150—Brake Systems.....4
   AUTO F162—Automotive Practicum I 4
   AUTO F190—Suspension Alignment.....4
   AUTO F202—Auto Fuel and Emissions Systems.....4
   AUTO F222—Automotive Engine Performance 3
   AUTO F227—Automotive Electrical III.....3
4. Minimum credits required 34

* *Students must earn a C grade (2.0) or better in each course.*

AVIATION MAINTENANCE

College of Rural and Community Development
Community and Technical College
907-455-2809
www.ctc.uaf.edu/programs/amt/

Certificate; A.A.S. Degree

Minimum Requirements for Certificate: 31 – 49 credits; for Degree: 64 credits

Aviation maintenance offers an A.A.S. degree and certificates in three areas: airframe, powerplant, or airframe and powerplant.

Students who receive a certificate in airframe and powerplant may elect to complete the A.A.S. degree in aviation maintenance to enhance their employability.

Students in the airframe and powerplant certificate program may complete requirements for the Federal Aviation Administration (FAA) mechanic's certificate with both airframe and powerplant ratings in as little as one year. The aviation maintenance program covers many subject areas, but it places special emphasis on those skills most sought after in the Alaska job market. Through classroom and hands-on laboratory instruction, this intensive curriculum prepares students for entry into the aviation field. Graduates who pass the FAA examinations for the airframe and powerplant ratings are qualified for entry-level positions in the maintenance, repair, overhaul and modification of aircraft.

Students interested in qualifying for an FAA airframe mechanic's certificate may choose to earn only the airframe certificate, and those who wish to qualify for an FAA powerplant mechanic's certificate may choose to earn only the powerplant certificate.

Admission to the airframe and powerplant programs is at the discretion of the program faculty and requires an interview with the faculty advisor. The program normally starts around the first of September of each year. Applicants may start at other times if they meet experience and educational qualifications that meet departmental approval.

Airframe and Powerplant — Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements. (See page 95. As part of the certificate requirements, the communication, computation and human relations content is embedded in the major required courses for this program.)
3. Complete the following general requirements:
   AFPM F145—Basic Mathematics 1
   AFPM F146—Basic Electricity 2
   AFPM F147—Physics for Mechanics 0.5
   AFPM F148—Aircraft Drawing 1
   AFPM F149—Fluid Lines and Fitting.....0.5
   AFPM F150—Materials and Processes 2
   AFPM F151—Cleaning and Corrosion Control.....1
   AFPM F152—Federal Aviation Regulations.....1
   AFPM F153—Weight and Balance 1
   AFPM F154—Ground Operations and Servicing.....0.5
4. Complete the following airframe structures requirements:
   AFPM F261—Non Metallic Structures.....1
   AFPM F262—Aircraft Coverings.....1
   AFPM F263—Aircraft Finishes 0.5
   AFPM F264—Sheet Metal Structures.....3
   AFPM F265—Aircraft Welding 1.5
   AFPM F266—Assembly and Rigging 1.5
   AFPM F267—Airframe Inspections 0.5
   AFPM F270—Airframe Testing 0.5
5. Complete the following airframe systems and components requirements:
   AFPM F230—Aircraft Electrical Systems.....2.5
   AFPM F253—Transport Category Aircraft.....1
   AFPM F254—Ice and Rain Control Systems.....0.5
   AFPM F256—Communications and Navigation Systems.....0.5
   AFPM F258—Cabin Atmosphere Control Systems.....1
   AFPM F259—Hydraulic and Pneumatic Systems 1.5
   AFPM F260—Aircraft Landing Gear Systems 1.5
6. Complete the following powerplant theory and maintenance requirements:
   AFPM F235—Aircraft Reciprocating Engines 4.5
   AFPM F240—Turbine Engines.....2
   AFPM F271—Powerplant Inspections 0.5
   AFPM F272—Powerplant Testing 0.5

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7. Complete the following powerplant systems and components requirements:
   AFPM F231—Powerplant Electrical Systems....1.5
   AFPM F244—Lubrication Systems....1.5
   AFPM F245—Ignition Systems....2
   AFPM F246—Fuel Metering Systems....2
   AFPM F248—Induction Systems....0.5
   AFPM F249—Powerplant Cooling Systems....0.5
   AFPM F250—Powerplant Exhaust Systems....0.5
   AFPM F252—Propellers....2
8. Complete the following combined systems and components requirements:
   AFPM F251—Fuel Systems....1.5
   AFPM F255—Fire Protection Systems....0.5
   AFPM F257—Instrument Systems....0.5
9. Minimum credits required....49

Airframe — Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements. (See page 95. As part of the certificate requirements, the communication, computation and human relations content is embedded in the major required courses for this program.)
3. Complete the following general requirements:
   AFPM F145—Basic Mathematics....1
   AFPM F146—Basic Electricity....2
   AFPM F147—Physics for Mechanics....0.5
   AFPM F148—Aircraft Drawing....1
   AFPM F149—Fluid Lines and Fitting....0.5
   AFPM F150—Materials and Processes....2
   AFPM F151—Cleaning and Corrosion Control....1
   AFPM F152—Federal Aviation Regulations....1
   AFPM F153—Weight and Balance....1
   AFPM F154—Ground Operations and Servicing....0.5
4. Complete the following airframe structures requirements:
   AFPM F261—Non-Metallic Structures....1
   AFPM F262—Aircraft Coverings....1
   AFPM F263—Aircraft Finishes....0.5
   AFPM F264—Sheet Metal Structures....3
   AFPM F265—Aircraft Welding....1.5
   AFPM F266—Assembly and Rigging....1.5
   AFPM F267—Airframe Inspections....0.5
   AFPM F270—Airframe Testing....0.5
5. Complete the following airframe systems and components requirements:
   AFPM F230—Aircraft Electrical Systems....2.5
   AFPM F253—Transport Category Aircraft....1
   AFPM F254—Ice and Rain Control Systems....0.5
   AFPM F256—Communications and Navigation Systems....0.5
   AFPM F258—Cabin Atmosphere Control Systems....1
   AFPM F259—Hydraulic and Pneumatic Systems....1.5
   AFPM F260—Aircraft Landing Gear Systems....1.5
6. Complete the following combined systems and components requirements:
   AFPM F251—Fuel Systems....1.5
   AFPM F255—Fire Protection Systems....0.5
   AFPM F257—Instrument Systems....0.5
7. Minimum credits required....31

Powerplant — Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements. (See page 95. As part of the certificate requirements, the communication, computation and human relations content is embedded in the major required courses for this program.)
3. Complete the following general requirements:
   AFPM F145—Basic Mathematics....1
   AFPM F146—Basic Electricity....2
   AFPM F147—Physics for Mechanics....0.5
   AFPM F148—Aircraft Drawing....1
   AFPM F149—Fluid Lines and Fitting....0.5
   AFPM F150—Materials and Processes....2
   AFPM F151—Cleaning and Corrosion Control....1
   AFPM F152—Federal Aviation Regulations....1
   AFPM F153—Weight and Balance....1
   AFPM F154—Ground Operations and Servicing....0.5
4. Complete the following powerplant theory and maintenance requirements:
   AFPM F235—Aircraft Reciprocating Engines....4.5
   AFPM F240—Turbine Engines....2
   AFPM F271—Powerplant Inspections....0.5
   AFPM F272—Powerplant Testing....0.5
5. Complete the following powerplant and systems components requirements:
   AFPM F231—Powerplant Electrical Systems....1.5
   AFPM F244—Lubrication Systems....1.5
   AFPM F245—Ignition Systems....2
   AFPM F246—Fuel Metering Systems....2
   AFPM F248—Induction Systems....0.5
   AFPM F249—Powerplant Cooling Systems....0.5
   AFPM F250—Powerplant Exhaust Systems....0.5
   AFPM F252—Propellers....2
6. Complete the following combined systems and components requirements:
   AFPM F251—Fuel Systems....1.5
   AFPM F255—Fire Protection Systems....0.5
   AFPM F257—Instrument Systems....0.5
7. Minimum credits required....31

Note: This is a one-year program, usually starting at the beginning of September. Entry at other times is allowed only with departmental approval. A personal background check and drug test will be required prior to acceptance into the airframe and powerplant, airframe or powerplant certificate programs.

Aviation Maintenance — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete the requirements for the airframe and powerplant certificate....49
4. Minimum credits required....64

* *Students must earn a C grade (2.0) or better in each course.*

BUSINESS, APPLIED

College of Rural and Community Development
Community and Technical College 907-455-2800
Department of Applied Business, Paralegal and Accounting
www.ctc.uaf.edu/programs/abus/

A.A.S. Degree

Minimum Requirements for Degree: 60 credits

Planning and preparation are the keys to success in business. The A.A.S. degree in applied business provides students with the skills and training needed to run a business effectively. The program covers basic knowledge and skills, emerging technologies, advanced

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procedures and interpersonal skills. Courses teach the principles of accounting, management, human relations, math, communications, customer service, computers, law, finance and logic. Instructors provide a practical understanding of the marketplace — not just a textbook view of business.

Potential careers for graduates include entrepreneurship and mid-level positions in business management, tourism, human resources and public administration.

Major — A.A.S. Degree

Concentrations: Administrative Management, Applied Management, Computer Applications, Entrepreneurship, Finance, Health Care Management, Human Resources, International Business, Management, Marketing, Public Management, Recreation and Guiding Management, and Tourism.

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements. (See page 97. As part of the A.A.S. degree requirements, it is recommended that students complete ABUS F154 for the human relations requirement.)
3. Complete the following general business requirements:*
   ABUS F101—Principles of Accounting I 3
   ABUS F161—Personal and Business Finance 3
   ABUS F175—Customer Service 3
   ABUS F179—Fundamentals of Supervision 3
   ABUS F232—Contemporary Management Issues 3
   ABUS F241—Applied Business Law (3)
   or ABUS F242—Employment Law (3) 3
   ABUS F260—Marketing Practices (3)
   or ABUS F263—Public Relations (3) 3
   BA F151—Introduction to Business 3
4. Complete one of the following concentrations:*

Administrative Management

Complete the following:
ABUS F102C—Keyboarding: Document Formatting 1
ABUS F116—Using 10-Key Calculators 1
ABUS F134—Alphabetic Filing 1
ABUS F170—Business English 3
ABUS F182—Office Procedures 3
ABUS F183—Advanced Job Readiness Skills 2
ABUS F199—Practicum in Applied Business 1
ABUS F264—Filing/Records Management 3
CIOS electives appropriate to skill level 3
ABUS, CIOS or CITS electives appropriate to skill level 3

Applied Management

Complete one of the following (21 or more credits):
a. A university approved certificate; or
b. A professional, technical or vocational license or certification issued by government or industry and 21 department approved electives.

Computer Applications

Complete the following:
CIOS F130—Microcomputer Word Processing 3
CIOS F135—Microcomputer Spreadsheets 3
CIOS F240—Microcomputer Databases 3
CIOS F146—Using Internet Tools and Technologies (3)
or CITS F220—Implementing Internet Tools and Technologies (3) 3
CIOS F233—Desktop Publishing (3)
or CIOS F255—Microcomputer Graphics 3
ABUS, ACCT, BA, CITS or CIOS electives 6

Entrepreneurship

Complete the following:
ABUS F201—Principles of Accounting II (3)
or ABUS F210—Income Tax (3)
or ABUS F220—QuickBooks Accounting (3)
or ABUS F221—Microcomputer Accounting (3)
or ABUS F235—Fund Accounting for Non-Profits (3) 3
ABUS F233—Financial Management (3)
or ABUS F234—Introduction to Investing (3) 3
ABUS F265—Seminar in Applied Marketing 3
ABUS F272—Small Business Planning 3
ABUS F273—Managing a Small Business 3
ABUS F274—E-commerce 3
ABUS, ACCT, BA, CITS or CIOS electives 3

Finance

Complete the following:
ABUS F160—Principles of Banking 3
ABUS F201—Principles of Accounting II 3
ABUS F210—Income Tax 3
ABUS F220—QuickBooks Accounting (3)
or ABUS F221—Microcomputer Accounting (3) 3
ABUS F233—Financial Management 3
ABUS F234—Introduction to Investing 3
ABUS F272—Small Business Planning 3

Health Care Management

Complete the following:
HLTH F100—Medical Terminology 3
HLTH F118—Medical Law and Ethics 2
HLTH F132—Administrative Procedures I 2
HLTH F208—Human Diseases 3
HLTH F234—Administrative Procedures II 4
HLTH F235—Medical Coding 4
HLTH F236—Outpatient Health Care Reimbursement 3

Human Resources

Complete the following:
ABUS F141—Payroll Accounting 3
ABUS F178—Professionalism 3
ABUS F231—Introduction to Personnel 3
ABUS F242—Employment Law 3
CIOS F135—Microcomputer Spreadsheets 3
CIOS F240—Microcomputer Databases 3
ABUS, ACCT, BA or CIOS electives 3

International Business

a. Complete the following:
   ABUS F178—Professionalism 3
   ABUS F233—Financial Management 3
   ABUS F265—Seminar in Applied Marketing 3
   ABUS F275—Applied International Business 3
   Foreign language elective 3
b. Complete one of the following elective options:
   Option 1
   ABUS F272—Small Business Planning (3)
   or ABUS F273—Managing a Small Business (3) 3
   PS F201—Comparative Politics (3)
   or PS F321W—International Politics (3) 3
   Option 2
   ABUS F299—Practicum in Applied Business (Study Abroad) 6

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Management

Complete the following:
ABUS, ACCT, BA, ECON, MATH or STAT or other department-approved electives.....21
Recommended courses include, but are not limited to:
MATH F161X, MATH F262, ACCT F262, ECON F100X, ECON F200, ECON F201, ECON F202, ECON F227, BA F254, STAT F200X, ABUS F201, ABUS F202, etc.

Marketing

Complete the following:
ABUS F178—Professionalism.....3
ABUS F265—Seminar in Applied Marketing 3
ABUS F274—E-commerce.....3
CIOS F233-Desktop Publishing (3)
or CIOS F255—Microcomputer Graphics.....3
CIOS or CITS F200-level or above Internet or web design elective.....3
ABUS, BA or CIOS electives.....6

Public Management

Complete the following:
ABUS F235—Fund Accounting.....3
PS F100X—Political Economy 3
PS F101—Introduction to American Government and Politics 3
PS F212—Introduction to Public Administration.....3
PS F403W—Public Policy (3)
or ABUS F242—Employment Law 3
ABUS, ACCT, CIOS or PS electives 6

Recreation and Guiding Management

Complete the following:
ABUS F158—Introduction to Tourism 3
NRM F101—Natural Resources Conservation and Policy 3
NRM F161—Wilderness Leadership Education.....3
EMS F152—Emergency Trauma Training First Responder (3)
or EMS F195—Wilderness First Responder (3)
or more advanced Emergency First Responder Training (3) .3
EMS F257—Arctic Survival (3)
or NRM F361—Advanced Wilderness Leadership (3) 3
RECR electives.....6

Tourism

a. Complete the following:
ABUS F158—Introduction to Tourism.....3
ABUS F199—Practicum in Applied Business.....3
ABUS F265—Seminar in Applied Marketing 3
ABUS F275—Applied International Business.....3
b. Complete 3 credits from the following electives:
ABUS F256—Small Hotel, Bed and Breakfast, and Lodge Operations .....1 – 3
ABUS F267—Transportation and Logistics Management .....1 – 3
ABUS F268—Rural Tourism: Planning and Principles...1 – 3
ABUS F269—Food and Beverage Management.....1 – 3
c. Complete one of the following elective options:
Option 1
ABUS, ACCT, BA, CAH or CIOS electives.....6
Option 2
ABUS F299—Practicum in Applied Business (Study Abroad) 3
Foreign language 3

5. Minimum credits required.....60

* *Students must earn a C grade (2.0) or better in each course.*

Minors

Applied Business — General Business

1. Complete the following:
ABUS F101—Principles of Accounting I.....3
ABUS F161—Personal and Business Finance.....3
ABUS F175—Customer Service.....3
ABUS F232—Contemporary Management Issues (3)
or ABUS F275—Applied International Business (3) 3
ABUS F260—Marketing Practices (3)
or ABUS F263—Public Relations (3).....3
BA F151—Introduction to Business 3

2. Minimum credits required.....18

Note: Other courses specific to individual education and career goals may be substituted with program approval.

Applied Business — Recreation and Guiding Management

1. Complete the following:
ABUS F158—Introduction to Tourism 3
ABUS F175—Customer Service.....3
NRM F161—Wilderness Leadership Education.....3
EMS F152—Emergency Trauma Training First Responder (3)
or EMS F195—Wilderness First Responder (3)
or more advanced Emergency First Responder Training (3).....3

2. Complete six credits from the following electives:
RECR electives (1-6)
or NRM F361—Advanced Wilderness Leadership (3)
or ABUS/NRM/RECR approved practicum (1-6).....6

3. Minimum credits required.....18

Note: Other courses specific to individual education and career goals may be substituted with program approval.

BUSINESS MANAGEMENT, APPLIED

College of Rural and Community Development
Department of Applied Business, Paralegal and Accounting
Community and Technical College 907-455-2800
www.ctc.uaf.edu/programs/abus/

Certificate

Minimum Requirements for Certificate: 30 credits

Planning and preparation are keys to success in business. The applied business management certificate provides students with the basic principles necessary to run a business effectively. Graduates of the program will have the foundation of contemporary management skills needed to successfully lead private, public and non-profit organizations through ever-changing social and economic conditions.

The program covers basic knowledge and skills, emerging technologies, advanced procedures, and interpersonal skills. Course work includes accounting, management, human relations, math, communications, customer service, computers, law, finance and logic. The curriculum also serves as the first year of training toward the A.A.S. degree in applied business.

Potential careers for graduates include entrepreneurship and entry-level positions in business management, tourism, human resources, public administration and office administration.

Certificate Program

Concentrations: Computer Applications, Finance, General Business, Human Resources, International Business, Marketing, Office Administration, Public Management, Recreational Guiding and Tourism.

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1. Complete the general university requirements (page 93).
2. Complete the following certificate requirements:
   a. Complete 3 credits from one of the following communication courses:
      ABUS F170—Business English (3)
      or ABUS F271—Business Communications (3)
      or ENGL F111X—Introduction to Academic Writing (3)
      or ENGL F212—Business, Grant, and Report Writing (3)....3
   b. Complete one of the following computation requirements:
      ABUS F155—Business Math (3)
      or any MATH course at the F100-level or above (3) 3
   c. Complete the following human relations course:
      ABUS F154—Human Relations (3)
      or other approved human relations course.....3
3. Complete the following general business courses:
   ABUS F101—Principles of Accounting I.....3
   ABUS F161—Personal and Business Finance.....3
   BA F151—Introduction to Business 3
4. Complete one of the following concentrations:

Computer Applications

CIOS F130—Microcomputer Word Processing.....3
CIOS F135—Microcomputer Spreadsheets.....3
CIOS F240—Microcomputer Databases.....3
CIOS F146—Using Internet Tools and Technologies (3)
or CITS F220—Implementing Internet Tools and Technologies (3) 3

Finance

ABUS F160—Principles of Banking.....3
ABUS F210—Income Tax 3
ABUS F233—Financial Management 3
ABUS F234—Introduction to Investing 3

General Business

ABUS F201—Principles of Accounting II (3)
or ABUS F210—Income Tax (3)
or ABUS F220—QuickBooks Accounting (3)
or ABUS F221—Microcomputer Accounting (3)
or ABUS F235—Fund Accounting for Non-Profits (3) 3
ABUS F179—Fundamentals of Supervision.....3
ABUS F232—Contemporary Management Issues (3)
or ABUS F275—Applied International Business (3) 3
ABUS F260—Marketing Practices (3)
or ABUS F263—Public Relations (3).....3

Human Resources

ABUS F141—Payroll Accounting.....3
ABUS F179—Fundamentals of Supervision.....3
ABUS F231—Introduction to Personnel 3
ABUS F242—Employment Law.....3

International Business

ABUS F178—Professionalism.....3
ABUS F275—Applied International Business (3)
or ABUS F232—Contemporary Management Issues (3).....3
PS F201—Comparative Politics.....3
Foreign language elective 3

Marketing

ABUS F175—Customer Service.....3
ABUS F178—Professionalism.....3
ABUS F260—Marketing Practices (3)
or ABUS F263—Public Relations (3).....3
CIOS F200-level graphics or web design elective.....3

Office Administration

ABUS F170—Business English 3
ABUS F182—Office Procedures.....3
ABUS F199—Practicum in Applied Business 1
CIOS Elective appropriate to skill level.....3
Advisor approved ABUS or CIOS electives 2

Public Management

ABUS F235—Fund Accounting.....3
PS F100X—Political Economy 3
PS F101—Introduction to American Government and Politics (3)
or ABUS F232—Contemporary Management Issues (3).....3
PS F212—Introduction to Public Administration 3

Recreational Guiding

ABUS F175—Customer Service.....3
NRM F161—Wilderness Leadership Education.....3
EMS F152—Emergency Trauma Training First Responder (3)
or EMS F195—Wilderness First Responder (3)
or more advanced Emergency First Responder Training (3).....3
RECR electives.....3

Tourism

ABUS F158—Introduction to Tourism 3
ABUS F175—Customer Service.....3
ABUS F199—Practicum in Applied Business 3
ABUS F256—Small Hotel, Bed and Breakfast, and Lodge Operations (1-3)
or ABUS F267—Transportation and Logistics Management (1-3)
or ABUS F268—Rural Tourism: Planning and Principles (1-3)
or ABUS F269—Food and Beverage Management (1-3) 3

5. Minimum credits required.....30

Note: Other courses specific to individual education and career goals may be substituted with program approval.

COMMUNITY HEALTH

College of Rural and Community Development
Bristol Bay Campus 907-842-5109
Chukchi Campus 907-442-3400
Interior-Aleutians Campus 907-474-5439
Kuskokwim Campus 907-543-4500
Northwest Campus 907-443-2201
http://ruralhealth.uaf.edu
Community Health Aide/Practitioner Training Centers:
Anchorage CHA Training Program, ANTHC 907-729-2427;
Norton Sound Health Corp., Nome 907-443-3404;
Southeast Alaska Regional Health Corp., Sitka 907-966-8758;
Yukon-Kuskokwim Health Corp., Bethel 907-543-6120.

Certificate; A.A.S. Degree

Minimum Requirements for Certificate: 34 credits; for Degree: 60 credits

The community health aide/practitioner (CHA/P) training program prepares students to provide primary health care services in villages, under the supervision of a referral physician. As a prerequisite, students entering the program must be employed by a regional health corporation.

The educational program consists of four basic training sessions, each four weeks long and followed by a field component in

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the CHA's village clinic. The curriculum includes the knowledge and skills necessary to provide acute care for common medical problems, emergency care, follow-up care for patients with chronic illnesses, and preventive services including prenatal and well-child care. The training also includes state-approved emergency care courses, completion of a skills checklist, a supervised clinical preceptorship, and passing the CHP statewide examination.

Upon successful completion of all certification requirements, students are awarded a community health practitioner (CHP) certificate by the training center. Students completing the training program also meet the requirements for a university certificate recognizing the credits earned. These credits may be used to satisfy requirements for the A.A.S. degree.

The CHA/P academic review committee (ARC), composed of representatives from the regional health corporations, training centers and university, ensures that the curriculum and certification process is kept uniform throughout the state. The ARC reports to the Association of CHA/P Program Directors and serves in an advisory role to the dean of the College of Rural and Community Development.

For more information about the CHA/P basic training program, contact one of the CHA/P training centers. For more information about the A.A.S. degree, contact the College of Rural and Community Development health programs office at 907-455-2050 or 866-955-2050.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements. (See page 95. As part of the certificate requirements, the communication, computation and human relations content is embedded in some of the major required courses for this program.)
3. Complete the following:
   CHP F131—Community Health Aide, Session I.....8
   CHP F132—Community Health Aide, Session II.....8
   CHP F133—Community Health Aide, Session III 8
   CHP F134—Community Health Aide, Session IV 8
   CHP F135—Community Health Aide, Preceptorship.....2
4. Minimum credits required.....34

Note: The student may take CHP F082 prior to CHP F131 as an option when regionally available.

Major — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete the following program (major) requirements:*
   a. Complete the following:
      CHP F131—Community Health Aide, Session I.....8
      CHP F132—Community Health Aide, Session II.....8
      CHP F133—Community Health Aide, Session III 8
      CHP F134—Community Health Aide, Session IV 8
      CHP F135—Community Health Aide, Preceptorship.....2
   b. Complete 5 or more credits from the following:
      CHP F203—Clinical Update for Community Health Practitioners.....1 – 3
      CHP F206—Mental Health and Substance Abuse.....1 – 3
      CHP F207—Maternal and Infant Health.....1 – 3
      CHP F208—Communicable Diseases .....1 – 3
      CHP F211—Health Education .....1 – 3
      CHP F212—Diabetes: Primary Prevention and Village Medical Care.....1 – 3
      CHP F214—Cancer: Risks, Diagnosis and Treatment.....3
      CHP F215—Death and Dying 3
      CHP F220—Women's Health: Breast and Cervical Cancer Screening.....2
      CHP F250—Current Issues in Rural Health Care** .....1 – 3
      CHP F293—Special topic courses
      EMS—any F200-level courses
      HLTH—any F200-level courses
4. Complete electives.....6
5. Minimum credits required.....60

* *Students must earn a C grade (2.0) or better in each course.*
** *May repeat up to 3 credits toward A.A.S. degree.*

CONSTRUCTION MANAGEMENT

College of Rural and Community Development
Community and Technical College
907-455-2846
www.ctc.uaf.edu/programs/cm/

A.A.S. Degree

Minimum Requirements for Degree: 65 credits

The construction management program meets growing needs in the construction industry by training entry-level construction managers and by providing continuing education for construction employees.

Construction managers plan, direct and are responsible for oversight of construction projects. They are responsible for coordinating and managing people, materials and equipment; budgets, schedules and contracts; and the safety of employees and the general public. Construction managers determine construction means and methods and the most cost-effective plans and schedules. They track construction costs and administer contract changes to the project budget to maximize profitability. Construction managers monitor work progress to ensure compliance with architectural and engineering drawings and specifications.

Construction managers work in all phases of the construction business — for public and private owners; on small multi-family projects to the largest of skyscrapers and industrial projects; and on rural roads to major highways. Construction managers work closely with architects, engineers, owners and the various contractors on a construction job. The construction manager's duties are varied, challenging and rewarding.

UAF's construction management program was developed with input from local contractors and professional industry organizations. It provides students with a broad knowledge of building systems and construction techniques. CM graduates understand basic principles of business and know about the technical aspects of the construction industry. Graduates are able to function both in the construction office and on the job site.

The CM A.A.S. degree requires four to five semesters to complete. While not a prerequisite, it is recommended that students applying for admission have experience in the construction industry.

Major — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements. (See page 97. As part of the A.A.S. degree requirement complete ENGL F111X, ENGL F212 and COMM F131X or COMM F141X for the communications requirement, and MATH F107X for the computation requirement. The human relations content is embedded in some of the major required courses for this program).
3. Complete the following program (major) requirements:*
   ABUS F101 Principles of Accounting I.....3
   ABUS F201 Principles of Accounting II.....3
   CM F102 Methods of Building Construction.....3
   CM F123 Codes and Standards 3
   CM F142 Mechanical and Electrical Technology 4

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CM F163 Building Construction Cost Estimating.....3
CM F201 Construction Project Management.....3
CM F202 Project Planning and Scheduling.....3
CM F205 Construction Safety.....3
CM F213 Civil Technology.....4
CM F231 Structural Technology.....4
CM F263 Civil Construction Cost Estimating.....3
CM F299 Construction Management Internship.....3
DRT F170 Beginning AutoCAD.....3
MATH F108 Trigonometry.....3
PHYS F103X College Physics.....4

4. Minimum credits required.....65

* *Students must earn a C grade (2.0) or better in each course.*

CONSTRUCTION TRADES TECHNOLOGY

College of Rural and Community Development
Interior-Aleutians Campus
907-474-5439
www.uaf.edu/iac/

Certificate; A.A.S. Degree

Minimum Requirements for Certificate: 36.5 – 38.5 credits; for Degree: 73 – 75 credits

The construction trades technology program is designed to prepare students to work in the construction industry. The program prepares students for employment in areas where there is a projected shortage of skilled workers and for potential entry into an apprenticeship program.

This program provides students with fundamental knowledge of construction industry expectations as well as hands-on training. It responds to the skills targeted by Alaskan employers. Students completing the certificate program will have completed the first year of the A.A.S. degree program. Graduates of the A.A.S. degree program may pursue opportunities with employers as they acquire a higher level of construction trade skills.

A strong desire to work in the construction trades industry is important. Students must be willing to work collaboratively with industry employees in construction trades in their local area in order to fulfill the practicum components of courses.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements. (See page 95. As part of the certificate requirement, complete 3 credits each in the communication and human relations requirements.)
3. Complete 3 credits from one of the following computation courses:
   CTT F106—Construction Mathematics (3)
   or TTCH F131—Mathematics for the Trades (3).....3
4. Complete the following program (major) requirements:
   CTT F100—Construction Technology Core (3)
   or CTT F101—Basic Construction Safety (1)
   and CTT F102—Introduction to Hand and Power Tools (1)
   and CTT F103—Introduction to Blueprint Reading (1)
   and CTT F104—Basic Communication and Employability Skills (2).....3 – 5
   CTT F110—Residential Carpentry — Level One (8.5)
   or CTT F111—Materials and Tools Used in the Trade (2.5)
   and CTT F112—Floor Systems, Wall and Ceiling Framing (2)
   and CTT F113—Roof Framing, Windows and Exterior Doors (2)
   and CTT F114—Introduction to Concrete Materials and Forms (2).....8.5
   CTT F115—Residential Carpentry — Level Two (12)
   or CTT F116—Reading Plans and Site Layout — Level One (2)
   and CTT F117—Exterior Finish and Moisture Protection (2)
   and CTT F118—Roofing, Stairs and Metal Studs Applications (3)
   and CTT F119—Drywall and Interior Finish Applications (5).....12
   CTT F199—Student Practicum I.....3
   HLTH F122—First Aid and CPR.....1
5. Minimum credits required.....36.5 – 38.5

Major — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements. (See page 97. As part of the degree requirements, complete CTT F106 or TTCH F131 for the computation requirement.)
3. Complete the following construction trades technology certificate program requirements:
   CTT F100—Construction Technology Core (3)
   or CTT F101—Basic Construction Safety (1)
   and CTT F102—Introduction to Hand and Power Tools (1)
   and CTT F103—Introduction to Blueprint Reading (1)
   and CTT F104—Basic Communication and Employability Skills (2).....3 – 5
   CTT F110—Residential Carpentry — Level One (8.5)
   or CTT F111—Materials and Tools Used in the Trade (2.5)
   and CTT F112—Floor Systems, Wall and Ceiling Framing (2)
   and CTT F113—Roof Framing, Windows and Exterior Doors (2)
   and CTT F114—Introduction to Concrete Materials and Forms (2).....8.5
   CTT F115—Residential Carpentry — Level Two (12)
   or CTT F116—Reading Plans and Site Layout — Level One (2)
   and CTT F117—Exterior Finish and Moisture Protection (2)
   and CTT F118—Roofing, Stairs and Metal Studs Applications (3)
   and CTT F119—Drywall and Interior Finish Applications (5).....12
   CTT F199—Student Practicum I.....3
   HLTH F122—First Aid and CPR.....1
4. Complete the following program (major) requirements:*
   CTT F150—Plumbing — Level One (4)
   or CTT F151—Introduction to Plumbing Tools and Plumbing Drawings (1)
   and CTT F152—Introduction to Plumbing Math (1)
   and CTT F153—Plastic and Copper Pipe and Fittings (1)
   and CTT F154—Fixtures, Faucets, and Venting Systems (1).....4
   CTT F155—Plumbing — Level Two (8)
   or CTT F156—Intermediate Math and Reading Commercial Drawings (2)
   and CTT F157—Installing and Testing DWV Piping and Other Drains (2)
   and CTT F158—Valves, Faucets and Fixtures: Installation and Testing (3)
   and CTT F159—Fuel Gas Systems (1).....8
   CTT F170—Residential Electrical — Level One (9)
   or CTT F171—Electrical Safety and Electric Theory (2)
   and CTT F172—Alternating Current, Electrical Test Equipment and the NEC (2)

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and CTT F173—Raceways, Boxes, Fittings and Hand Bending (2.5)
and CTT F174—Boxes, Fittings, Conductors, Terminations and Splices (2.5) 9
CTT F175—Residential Electrical — Level Two (8)
or CTT F176—Electrical Blueprint Reading, Wiring Devices, and Raceway, Box and Fitting Fill (2)
and CTT F177—Wiring: Commercial and Residential, and Grounding (2)
and CTT F178—Circuit Breakers, Fuses and Electric Services (2)
and CTT F179—Lighting Fixtures and Related Components (2).....8
CTT F299—Student Practicum II 1.5

5. Minimum credits required.....73 – 75

* *Students must earn a C grade (2.0) or better in each course.*

CULINARY ARTS

College of Rural and Community Development
Community and Technical College
907-455-2800
www.ctc.uaf.edu/programs/culinary/

Certificate; A.A.S. Degree

Minimum Requirements for Certificate: 37 credits; for Degree: 69 credits

The culinary arts program prepares students for a career in this expanding field. Graduates can seek employment in food production or in management of restaurants, bakeries, hotels, hospitals, camps or any other facility that requires food service as part of its operation. This department offers both an associate degree and a certificate.

Certificate Program

Concentrations: Baking, Cooking, Culinary Arts

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements. (See page 95. As part of the certificate requirements, the computation content is included in CAH F256.)
3. Complete the following:
   CAH F105—Principles of Food Service 3
   CAH F140—Culinary I – Principles and Techniques.....4
   CAH F145—Bakery Production I.....5
   CAH F150—Food Service Sanitation 2
   CAH F152—Supervisory Development.....2
   CAH F161—Pastry Tube Art 1
   CAH F256—Restaurant and Hospitality Cost Management 2
4. Complete 2 credits from the following culinary specialty electives:
   CAH F117—Art in Cake Icing.....2
   CAH F154—Food and Beverage Service 2
   CAH F160—Principles of Nutrition.....2
   CAH F170—Gourmet Cooking.....2
   CAH F171—Gourmet Baking.....2
   CAH F172—Gourmet Asian/Oriental Cooking.....2
   CAH F175—Protein Fabrication 3
   CAH F257—Introduction to Wine Appreciation 1
   CAH F258—Intermediate Wine Appreciation 1
5. Complete one of the following concentrations:
   a. Culinary Arts
      CAH F141—Culinary II – Stocks, Soups and Sauces.....4
      CAH F146—Introduction to Bakery and Pastry.....4
   b. Culinary Arts: Baking
      CAH F146—Introduction to Bakery and Pastry.....4
      CAH F247—Bakery Production III 5
   c. Culinary Arts: Cooking
      CAH F141—Culinary II – Stocks, Soups and Sauces.....4
      CAH F242—Culinary III – Vegetables and Starches 4
6. Minimum credits required.....37

Major — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete the following program (major) requirements:*
   CAH F105—Principles of Food Service 3
   CAH F140—Culinary I – Principles and Techniques.....4
   CAH F141—Culinary II – Stocks, Soups and Sauces.....4
   CAH F145—Bakery Production I.....5
   CAH F146—Introduction to Bakery and Pastry.....4
   CAH F150—Food Service Sanitation 2
   CAH F152—Supervisory Development.....2
   CAH F242—Culinary III – Vegetables and Starches 4
   CAH F243—Culinary IV – A la Carte Cookery.....4
   CAH F247—Bakery Production III 5
   CAH F248—Intermediate Baking and Pastry.....4
   CAH F250—Garde-Manger 4
   CAH F253—Storeroom Purchasing and Receiving 2
   CAH F255—Human Resource and Supervision in Hospitality .3
   CAH F256—Restaurant and Hospitality Cost Management 2
4. Minimum credits required.....69

* *Students must earn a C grade (2.0) or better in each course.*

DENTAL HYGIENE

College of Rural and Community Development
Community and Technical College
907-455-2834
www.ctc.uaf.edu/programs/health/dh/

A.A.S. Degree

Minimum Requirements for A.A.S. Degree: 69 credits

The registered dental hygienist is a licensed oral health educator and clinical operator who uses preventive, educational and therapeutic methods to help individuals and groups attain and maintain optimum oral health. The dental hygiene A.A.S. degree is a three-year program with one year of prerequisite science and general education courses and two years of course work in dental hygiene. The program prepares graduates clinically and academically to take the National and Western Regional Examining Boards for licensure. Once enrolled as a dental hygiene student, the student can anticipate a four-semester, 40-hour-per-week intensive program. Some evening classes and clinics are scheduled.

The dental hygiene program has received initial accreditation from the Commission on Dental Accreditation of the American Dental Association.

Admission Requirements

Admission to the dental hygiene program is competitive. Six students per year are accepted, based on the following criteria:

1. Complete UAF application.
2. Complete dental hygiene program application.
3. Proof of immunity to rubella, rubeola, varicella, hepatitis A, hepatitis B, tetanus, diphtheria and pertussis.
4. Evidence of freedom from tuberculosis by PPD or chest X-ray within the previous six months.

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5. Current CPR certification for health care providers.
6. Complete the required prerequisite with a C* (2.0) or better in each course, and an overall GPA of at least 2.5. GPA is considered in the admission criteria.
7. Scores on the Health Occupational Basic Entrance Test (HOBET).
8. Personal interview for top-tier candidates.
9. Complete prerequisite courses**:
   BIOL F111X—Human Anatomy and Physiology I.....4
   BIOL F112X—Human Anatomy and Physiology II.....4
   BIOL F240—Beginnings in Microbiology 4
   CHEM F103X—Basic General Chemistry 4
   CHEM F104X—Beginnings in Biochemistry: A Survey of Organic Chemistry and Biochemistry.....4
   HLTH F203—Science of Nutrition.....3
   PSY F101—Introduction to Psychology 3

** *Courses with equivalent content transferred from another university may be substituted for the above UAF courses.*

Note: Additional information and a complete application packet are available at 907-455-2834 or 907-455-2805, fydh@uaf.edu, or www.ctc.uaf.edu/programs/health/dh/*. It is strongly recommended that interested students work with the dental hygiene advisor while preparing to apply to the program.*

Major — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements. (See page 97. As part of the degree requirements, complete SOC F100X for the human relations requirement.)
3. Complete the following program (major) requirements:*
   DA F150—Dental Radiography.....4
   DH F111—Dental Anatomy Embryology and Histology 2
   DH F112—Techniques I for Dental Hygienists 7
   DH F114—Anatomy of the Orofacial Structures.....2
   DH F121—Periodontics I 2
   DH F122—Techniques II for Dental Hygienists 4
   DH F165—Introduction to Dental Pharmacology.....2
   DH F181—Clinical Practicum I 4
   DH F182—Clinical Seminar I.....1
   DH F211—Periodontics II.....2
   DH F212—Techniques III for Dental Hygienists.....3
   DH F214—Pathology for Oral Tissues 2
   DH F224—Principles of Dental Health 3
   DH F283—Clinical Practicum II for Dental Hygienists 5
   DH F284—Clinical Seminar II 1
   DH F285—Clinical Practicum III for Dental Hygienists.....6
   DH F286—Clinical Seminar III 1
   DH F310—Oral Pain Control for Dental Hygienists.....3
4. Minimum credits required 69

* *Students must earn a C grade (2.0) or better in each course.*

DIESEL/HEAVY EQUIPMENT

College of Rural and Community Development
Community and Technical College
907-455-2809
www.ctc.uaf.edu/programs/diesel/

Certificate
Minimum Requirements for Certificate: 36 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 adjustments from tune-ups to complete engine and equipment overhauls. Students work on large truck fuel, electrical and air systems, diesel engines, transmissions, differentials, crawler tractor undercarriages, steering and final drives. A student may request credit by examination for any DSLT or MECN class. See department coordinator for details.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements. (See page 95. As part of the certificate requirements, the communication, human relations, and computation content is embedded in the major required courses for this program.)
3. Complete the following program (major) requirements:
   DSLT F101—Safety Including Rigging and Lifting 1
   DSLT F103—Basic Equipment and Truck Operation.....1
   DSLT F105—Preventive Maintenance.....3
   DSLT F107—Basic Electrical Systems and Electrical Fuel Injection.....3
   DSLT F123—Heavy Duty Braking Systems 3
   DSLT F154—Diesel Fuel Injection.....3
   DSLT F201—Manual Transmissions and Differentials.....3
   DSLT F202—Heavy Duty Automatic Transmissions.....2
   DSLT F254—Engines 5
   MECN F103—Starting and Charging Systems 3
   MECN F210—Hydraulics.....3
   WMT F103—Welding I.....3
   WMT F105—Welding II.....3
4. Minimum credits required 36

DRAFTING TECHNOLOGY

College of Rural and Community Development
Community and Technical College
907-455-2845
www.ctc.uaf.edu/programs/drafting/

Certificate; A.A.S. Degree
Minimum Requirements for Certificate: 33 – 34 credits;
for Degree: 60 – 63 credits

The drafting technology programs combine focused training in computer-aided drafting with a well-rounded exposure to the professions, trades and materials common to construction in Alaska. Courses combine technical CAD training with the vocabulary and knowledge needed to communicate with future employers in the architectural, engineering and construction fields. Students develop skills in mathematics, drawing and multi-functional CAD techniques. Students are instructed in traditional drawing techniques, CAD, and building information modeling technologies, giving them the knowledge and flexibility to work traditionally and with the most recent drafting technologies. Required courses cover many aspects of design and construction, including building materials, codes, and civil, mechanical, electrical and structural technologies. Qualified students have the opportunity to work side-by-side with professionals from the architectural and engineering community in internships, gaining valuable on-the-job experience.

Students entering the certificate program are expected to have computer skills equivalent to CIOS F150.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements (page 95).

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3. Complete the following certificate requirements:
   DRT F101—Introduction to Drafting....3
   DRT F121—Construction Documents and Drawings....3
   DRT F170—Beginning CAD....3
   DRT F210—Intermediate CAD....3
   DRT F270—Advanced CAD....3

4. Complete one of the following concentrations:

Architectural Drafting
   CM F102—Methods of Building Construction....3
   CM F123—Codes and Standards....3
   DRT F140—Architectural Drafting....3

Civil Drafting
   CM F102—Methods of Building Construction....3
   CM F213—Civil Technology....4
   DRT F150—Civil Drafting....3

Information Technology
   CITS F203—Information Technology Support Fundamentals....4
   CITS F204—Introduction to Network Support and Administration....3
   CITS F261—Computer and Information Security....3

Mechanical and Electrical Drafting
   CM F102—Methods of Building Construction....3
   CM F142—Mechanical and Electrical Technology....4
   DRT F155—Mechanical and Electrical Drafting....3

Process Technology
   PRT F101—Introduction to Process Technology....3
   PRT F110—Introduction to Occupational Safety, Health and Environmental Awareness....3
   PRT F117—Drafting for Technicians....3

Structural Drafting
   CM F102—Methods of Building Construction....3
   CM F231—Structural Technology....4
   DRT F145—Structural Drafting....3

5. Minimum credits required....33 – 34

Note: DRT F160 Drafting Internship may be substituted for concentration-specific DRT courses with program approval.

Major – A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete the following program (major) requirements:*
   DRT F101—Introduction to Drafting....3
   DRT F140—Architectural Drafting....3
   DRT F150—Civil Drafting....3
   DRT F170—Beginning CAD....3
   DRT F210—Intermediate CAD....3
   DRT F270—Advanced CAD....3
   DRT F145—Structural Drafting....3
   DRT F155—Mechanical and Electrical Drafting....3
   CM F102—Means and Methods of Building Construction....3
   CM F123—Codes and Standards....3
   CM F142—Mechanical and Electrical Technology....4
   CM F213—Civil Technology....4
   CM F231—Structural Technology....4
4. Complete 3 – 6 credits from the following electives:
   DRT F160—Drafting Internship....3 – 6
   DRT F121—Construction Documents and Drawings....3
   CM F201—Construction Project Management....3
   ES F101—Introduction to Engineering**....3
5. Minimum credits required....60 – 63

* *Students must earn a C grade (2.0) or better in each course*
** *This elective requires additional math prerequisites.*

EARLY CHILDHOOD EDUCATION

College of Rural and Community Development
Bristol Bay Campus 907-842-5109
Chukchi Campus 907-442-3400
Interior-Aleutians Campus 907-474-5207
Kuskokwim Campus 907-543-4500
Northwest Campus 907-443-2201
Community and Technical College 907-455-2883
www.ctc.uaf.edu/programs/e-childhood/

Certificate; A.A.S. Degree

Minimum Requirements for Certificate: 31 – 34 credits;
for Degree: 60 credits

This program prepares students for employment as early childhood and child care providers and improves the skills of those already employed in the field. Graduates pursue opportunities with child care centers, head start programs, early childhood education programs, child welfare service agencies, scouting services, staff training, program licensing and public school teacher aide programs. This program meets standards specified by the National Association for the Education of Young Children and leads to state certification as an Early Childhood Education Associate II.

The certification program in early childhood is for students enrolling in college for the first time as well as for those who are educated in other subject areas but desire retraining for employment in this field. Through course work, students gain the knowledge and skills they need to pursue the field-based Child Development Associate Credential and to meet state of Alaska requirements for employment as directors or teachers in licensed centers. Course work also fulfills minor or concentration requirements for degrees in other disciplines.

Students entering either the A.A.S. degree or certificate program should meet with an early childhood advisor to discuss a specific course of study. The required early childhood courses offered by any of the UAF campus sites may be used to meet graduation requirements for the certificate or degree.

An agreement between the UAF College of Rural and Community Development and the University of Alaska Southeast allows students in rural locations to take courses in early childhood education and obtain an A.A.S. degree via distance delivery. Students should contact their advisor for assistance with the selection of general education courses and electives that meet the degree requirements of their campus. The courses for the certificate and A.A.S. degree lay the foundation for the B.A. in Child Development and Family Studies.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the following certificate requirements:
   a. Complete the following communication courses:
      ENGL F111X—Introduction to Academic Writing....3
   b. Complete one of the following computation courses:
      ECE F117—Math Skills for Early Childhood Educators (3)
      Or any math course at the F100-level or above....3
   c. Complete the following human relations course:*
      ECE F107—Child Development II: The Preschool and Primary Years....3

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3. Complete the following program (major) requirements:*
   ECE F101—Introduction to Early Childhood Profession 3
   ECE F104—Child Development I: Prenatal, Infants and Toddlers 3
   ECE F110—Safe, Healthy, Learning Environments.....3
   ECE F119—Curriculum I: Principles and Practices 3
   ECE F120—Curriculum II: Thinking, Reasoning and Discovering (3)
   or ECE F220—Curriculum III: Infants and Toddlers (3).....3
   ECE F129—Foundations for Nutrition and Physical Wellness 3
   ECE F132—Young Child and the Family.....1
   ECE F140—Positive Social Development (3) 3
   ECE F170—Practicum I (3)
   or ECE F115—Responsive and Reflective Teaching (3)
   or ECE F299—Practicum for CDAs (3) 3
4. Minimum credits required.....34

* *Students must earn a C grade (2.0) or better in each course.*

Major — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements. (See page 97. As part of the A.A.S. degree requirement, complete ECE F117 or any course at the F100-level or above in mathematical sciences for the computation requirement, and ECE F107 for the human relations requirement.)
3. Complete the following:*
   ECE F101—Introduction to Early Childhood Profession 3
   ECE F104—Child Development I: Prenatal, Infants and Toddlers 3
   ECE F110—Safe, Healthy, Learning Environments.....3
   ECE F119—Curriculum I: Principles and Practices 3
   ECE F120—Curriculum II: Thinking, Reasoning and Discovering (3)
   or ECE F220—Curriculum III: Infants and Toddlers (3).....3
   ECE F129—Foundations for Nutrition and Physical Wellness 3
   ECE F140—Positive Social and Emotional Development.....3
   ECE F170—Practicum I (3)
   or ECE F115—Responsive and Reflective Teaching (3)
   or ECE F299—Practicum for CDAs (3) 3
   ECE F210—Child Guidance 3
   ECE F235—Screening, Assessment and Recording.....2
   ECE F230—Introduction to Children with Special Needs (3)
   or ECE F240—Inclusion of Children with Special Needs.....3
   ECE F242—Child and Family Ecology (3)
   or ECE F342—Family Relationships (3)
   or other advisor approved family class 3
   ECE F270—Practicum II.....3
4. Complete 7 credits as designated by an ECE advisor/ coordinator 7
5. Minimum credits required.....60

* *Students must earn a C grade (2.0) or better in each course.*

Minor

1. Complete the following:
   ECE F101—Introduction to Early Childhood Profession.....3
2. Complete 15 ECE credits, including a minimum of 6 upper-division ECE credits and excluding special topics (ECE X93) and current issue (ECE F249) courses. 15*
3. Minimum credits required.....18

* *Students majoring in the B.A. in Child Development and Family Studies may not use courses in the major to meet the requirements for the minor.*

EDUCATOR: PARA-PROFESSIONAL

College of Rural and Community Development
Interior-Aleutians Campus
907-474-5439
www.uaf.edu/iac/

Certificate; A.A.S. Degree

Minimum Requirements for Certificate: 30 credits; for A.A.S. Degree: 60 credits

The educator: para-professional (EDPA) program is designed to prepare students to work in classrooms assisting the classroom teacher. The EDPA curriculum emphasizes school protocols, classroom methods, management and assessment. This program prepares students for employment as a para-professional educator and will improve the skills of those currently employed in various educational settings.

The certificate provides students with fundamental knowledge of how a school system "works" as well as hands-on training in content, methodology, classroom management and student assessment. The curriculum leads into the educator: para-professional associate of applied science degree. Graduates of the A.A.S. degree program may pursue many opportunities with school districts and local education agencies. The program meets mandates established by the No Child Left Behind Act of 2002 for teacher aides as well as the competencies developed by the state of Alaska. Students entering either the certificate or the A.A.S. degree program must meet with a program advisor to discuss a program of studies and to develop an individual learning plan. Students may receive credit for prior learning through work-based experience after evaluation of their learning experiences.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements (page 95).
3. Complete the following core requirements:
   CIOS F100—Intro to Personal Computers.....1
   ED F110—Becoming a Teacher in the 21st Century 1
   PSY F101—Intro to Psychology 3
   EDPA F190—Integrating Local Knowledge into the Curriculum 1
   EDPA F199—Practicum 1
   EDPA F210—Technology in the Classroom 1
   ECE/PSY F245—Child Development 3
4. Complete the following program requirements:
   EDPA F110—Intro to Para-Professional Education 2
   EDPA F120—Classroom Management 2
   EDPA F130—Differentiating Instruction.....2
   EDPA F140—Developing Children as Writers 1
   EDPA F150—Developing Children as Readers 1
   EDPA F160—Primary Math Methods (1)
   or EDPA F170—Upper Elementary Math Methods (1).....1
   EDPA F250—Current Topics for Educators (1)
5. Minimum credits required.....30

Major — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete the following program requirements:*
   CIOS F100—Intro to Personal Computers.....1
   PSY F101—Intro to Psychology 3
   ED F110—Becoming a Teacher in the 21st Century 1
   EDPA F110—Intro to Para-Professional Education 2
   EDPA F120—Classroom Management 2

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EDPA F130—Differentiating Instruction.....2
EDPA F140—Developing Children as Writers.....1
EDPA F150—Developing Children as Readers.....1
EDPA F160—Primary Math Methods (1)
or EDPA F170—Upper Elementary Math Methods (1).....1
EDPA F190—Integrating Local Knowledge into the Curriculum.....1
EDPA F210—Technology in the Classroom.....1
EDPA F250—Current Topics for Educators.....1
EDPA F299—Practicum II.....1
ECE/PSY F245—Child Development.....3

4. Complete 12 credits from one of the following concentration areas or combine no more than 2 concentration areas with 6 credits of course work in each of the two concentration areas*:

Alaska Native Languages
ANL F199—Practicum in Native Language Education.....3
ANL F251—Introduction to Athabascan Linguistics.....3
ANL F255—Introduction to Alaska Native Languages: Eskimo-Aleut (3)
or ANL F256—Introduction to Alaska Native Languages: Indian Languages (3).....3
ANL F287—Teaching Methods of Alaska Native Languages.....3
ANL F288—Curriculum and Materials Development for Alaska Native Languages.....3
ANL Elective.....3

Elementary Education
ECE F105—Developmentally Appropriate Practice.....1
ED F102—Orientation to Alaska Native Education.....2
ED F201—Introduction to Education.....3
ED Elective.....6

Special Education
ED F201—Introduction to Education.....2
ECE F105—Developmentally Appropriate Practice.....1
ECE F230—Introduction to Children with Special Needs.....3
ECE F240—Inclusion of Children with Special Needs.....3
ECE Elective.....3

Counseling/Social Work
HUMS F120—Cultural Diversity in Human Services.....3
HUMS F125—Introduction to the Addictive Process.....3
HUMS F205—Basic Principles of Group Counseling.....3
HUMS Elective.....3

Early Childhood Education
ECE F105—Developing Appropriate Practice.....1
ECE F120—Curriculum and Activities for Young Children.....4
or
ECE F121—Physical Activities for Young Children.....1
ECE F122—Cognitive Activities for Young Children.....1
ECE F123—Communicative Activities.....1
ECE F124—Creative Activities for Young Children.....1
ECE F130—Culture, Learning and the Young Child.....1
ECE F140—Positive Social Development.....3
or
ECE F141—Class Management.....1
ECE F142—Social Development of the Young Child.....1
ECE F143—Developing Positive Self-Concepts in Young Children.....1
ECE F210—Child Development and Guidance.....3
ECE F235—Screening, Assessment and Recording.....2
ECE Elective.....3

Information Technology Specialist
CIOS F150—Computer Business Applications.....1 – 3
CIOS F110—Microcomputer Operating Systems.....1 – 3
CIOS F146—Using Internet Tools and Technologies.....1 – 3
CIOS F233—Desktop Publishing.....1 – 3
CIOS F255—Microcomputer Graphics.....1 – 3
CIOS Elective.....1 – 3

Rural Development
ANTH F230—The Oral Tradition: Folklore and Oral History.....3
HIST F250—Alaska History for Local Historians.....3
RD F255—Rural Alaska Land Issues.....3
RD F265—Perspectives on Subsistence in Alaska (3)
or RD F280—Resource Management Research Techniques (3)
or WLF F201—Wildlife Management Principles (3).....3
Elective.....3

Other Concentration
Any advisor-approved discipline-based concentration area.....12

5. Minimum credits required.....60

* *Students must earn a C grade (2.0) or better in each course.*

EMERGENCY SERVICES

College of Rural and Community Development
Community and Technical College
907-455-2853
www.ctc.uaf.edu/programs/emergency/

A.A.S. Degree

Minimum Requirements for Degree: 68 – 73 credits

The UAF emergency services program provides classroom education, hands-on training and practical vocational experience through 10 local fire and rescue organizations. The program offers students a fundamental working knowledge of the various aspects of municipal fire, wildland fire, emergency medical services and hazardous materials control.

Instructors provide a high level of technical expertise on a variety of specialty emergency services. The primary goal of this program is to make our students the most attractive candidates for job openings and promotions within fire and other emergency services fields.

Associate degrees in municipal fire control, wildlands fire control, hazardous materials, emergency medical services and public safety are offered.

Major — A.A.S. Degree

Concentrations: Emergency Medical Services, Hazardous Materials Control, Municipal Fire Control, Public Safety and Wildland Fire Control

Emergency Medical Services

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete the following program (major) requirements:*
EMS F170—EMT: Emergency Medical Technician I.....6
EMS F181—Clinical Rotation I.....4
EMS F183—Clinical Rotation II.....4
EMS F280—Paramedicine I.....12
EMS F282—Paramedicine II.....12
EMS F283—Paramedic Internship.....12
HLTH F114—Fundamentals of Anatomy and Physiology (4)
or BIOL F111X and F112X.....8

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4. Minimum credits required ..... 69 – 73

* *Students must earn a C grade (2.0) or better in each course.*

Hazardous Materials Control

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete the following program (major) requirements:*
   a. Complete the following:
      EMS F170—EMT: Emergency Medical Technician I 6
      FIRE F110—Introduction to Hazardous Waste Operations and Emergency Response 3
      FIRE F121—Fire Behavior and Combustion 3
      FIRE F131—Fire Fighter I Series I 3
      FIRE F133—Fire Fighter I Series II 3
      FIRE F135—Fire Fighter I Series III 3
      FIRE F137—Fire Fighter I Series IV 3
      FIRE F203—Hazardous Materials Chemistry I 3
      FIRE F205—Hazardous Materials Chemistry II 3
      FIRE F207—Hazardous Materials Technician 3
      FIRE F209—Hazardous Materials Command/Safety Officer 3
      FIRE F210—Fire Administration I 3
   b. Complete 9 credits from the following major elective courses:
      FIRE F212—Building and Fire Codes 3
      FIRE F215—Advanced Hazardous Materials Technician 3
      FIRE F216—Methods of Instruction for Emergency Services Training 3
      FIRE F231—Hazardous Materials Tactical Operations 3
      FIRE F249—Computer Aided Management of Emergency Operations 3
      FIRE F293—Special Topics 3
4. General electives 6
5. Minimum credits required 69

* *Students must earn a C grade (2.0) or better in each course.*

Note: Major electives and general electives must be approved by the student's advisor.

Municipal Fire Control

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete the following program (major) requirements:*
   a. Complete the following:
      EMS F170—EMT: Emergency Medical Technician I 6
      FIRE F101—Principles of Emergency Services 3
      FIRE F105—Fire Prevention 3
      FIRE F107—Strategy and Tactics 3
      FIRE F117—Rescue Practices 3
      FIRE F121—Fire Behavior and Combustion 3
      FIRE F131—Fire Fighter I Series I 3
      FIRE F133—Fire Fighter I Series II 3
      FIRE F135—Fire Fighter I Series III 3
      FIRE F137—Fire Fighter I Series IV 3
      FIRE F202—Fire Protection Hydraulics and Water Supply 3
      FIRE F203—Hazardous Materials Chemistry I 3
      FIRE F206—Building Construction for Fire Protection 3
      FIRE F210—Fire Administration I 3
      FIRE F214—Fire Protection Systems 3
   b. Complete 6 credits from the following major specialty electives:
      FIRE F115—Fire Apparatus and Equipment 3
      FIRE F123—Fire Investigations I 3
      FIRE F151—Wildland Fire Control I 3
      FIRE F205—Hazardous Materials Chemistry II 3
      FIRE F207—Hazardous Materials Technician 3
      FIRE F212—Building and Fire Codes 3
      FIRE F216—Methods of Instruction for Emergency Services Training 3
      FIRE F218—Advanced Rescue Practices 3
      FIRE F232—Fire Fighter II 3
      EMS F261—EMT: Emergency Medical Technician II 3
4. Minimum credits required 69

* *Students must earn a C grade (2.0) or better in each course.*

Note: Major electives must be approved by the student's advisor.

Public Safety

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete the following program (major) requirements:*
   a. Complete the following:
      AVTY F231/EMS F257—Arctic Survival 3
      EMS F170—EMT: Emergency Medical Technician I 6
      EMS F176—Aeromedical Evacuations in Alaska 1
      FIRE F101—Principles of Emergency Services 3
      FIRE F105—Fire Prevention 3
      FIRE F117—Rescue Practices 3
      FIRE F127—Vessel Safety: Emergency Equipment and Procedures 1
      FIRE F131—Firefighter I, Series I 3
      FIRE F133—Firefighter I, Series II 3
      FIRE F135—Firefighter I, Series III 3
      FIRE F137—Firefighter I, Series IV 3
      FIRE F218—Advanced Rescue Practices 3
      JUST F110—Introduction to Justice 3
      JUST F340—Rural Justice in Alaska 3
      JUST F358—Juvenile Delinquency 3
   b. Complete 9 credits from the following major electives:
      EMS F261—EMT: Emergency Medical Technician II 3
      FIRE F123—Fire Investigations I 3
      FIRE F151—Wildland Fire Control I 3
      FIRE F212—Building and Fire Codes 3
      FIRE F216—Methods of Instruction for Emergency Services Training 3
      JUST F345W—Police Problems 3
      JUST F352—Criminal Law 3
      JUST F354—Procedural Law 3
4. Minimum credits required 68

* *Students must earn a C grade (2.0) or better in each course.*

Wildland Fire Control

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete the following program (major) requirements:*
   a. Complete the following:
      EMS F170—EMT: Emergency Medical Technician I 6
      FIRE F131—Firefighter I, Series I 3
      FIRE F133—Firefighter I, Series II 3
      FIRE F135—Firefighter I, Series III 3
      FIRE F137—Firefighter I, Series IV 3
      FIRE F151—Wildland Fire Control I 3
      FIRE F153—Advanced Wildland Firefighter 3
      FIRE F155—Wildland Fire Behavior 3
      FIRE F157—Wildland Air Operations and Safety 3
      FIRE F159—Wildland Fire Operations Function 3
      FIRE F252—Wildland Fire Prevention 3
      FIRE F254—Wildland Fire Finance Function 3
      FIRE F262—Wildland Fire Control II 3
   b. Complete 12 credits from the following major elective courses:
      FIRE F161—Wildland Fire Logistics Function 3
      FIRE F165—Wildland Fire Planning Function 3

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FIRE F216—Methods of Instruction for Emergency Services Training....3
FIRE F256—Wildland Fire Planning and Multiple Use Management....3
FIRE F258—Wildland Fuels Management....3
FIRE F270—Wildland Fire Command Function....3

4. Minimum credits required....69

* *Students must earn a C grade (2.0) or better in each course.*

Note: Major electives and general electives must be approved by the student's advisor.

Minor

1. Complete the following:
FIRE F131—Firefighter I, Series I....3
FIRE F133—Firefighter I, Series II....3
FIRE F135—Firefighter I, Series III....3
FIRE F137—Firefighter I, Series IV....3
EMS F170—Emergency Medical Technician I....6

2. Minimum credits required....18

ENVIRONMENTAL STUDIES

College of Rural and Community Development
Bristol Bay Campus
907-842-5109
www.uaf.edu/bbc/

Certificate

Minimum Requirements for Certificate: 34 – 39 credits

This program addresses many of the environmental issues influencing Alaska communities and provides basic academic preparation for entry-level vocational environmental careers. The program serves as a stepping-stone into science-related associate or baccalaureate programs.

This program may be especially of interest to individuals employed by, and/or interested in employment with state, federal or tribal agencies or other groups providing natural resource management services. It is recommended that students have completed a high school lab-based science, biology or chemistry course as well as algebra due to the science focus of this program.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements (page 95).*
3. Complete the following requirements:
   a. Complete one of the following communication courses:
   ENGL F111X—Introduction to Academic Writing (3)
   or ABUS F170—Business English (3)....3
   b. Complete the following computation course:
   DEVM F105—Intermediate Algebra (3)
   or MATH/CS/STAT at the 100 level or higher....3
   c. Complete one of the following human relations courses:
   ANTH F100X/SOC F100X—Individual, Society and Culture (3)
   or ABUS F154—Human Relations (3)
   or other program-approved discipline-based human relations course....3
4. Complete the following program requirements:*
   a. Complete two science foundation courses:
   BIOL F103X—Biology and Society (4)
   or BIOL F104X—Natural History of Alaska (4)
   or BIOL F115X—Fundamentals of Biology I (4)....4
   CHEM F103X—Basic General Chemistry (4)
   or CHEM F105X—General Chemistry I (4)....4
   b. Complete the following:
   ENVI F101—Introduction to Environmental Science....3
   ENVI F110—Introduction to Water Quality I: Measurement....1
   ENVI F130—Intro to the National Environmental Policy Act..1
   ENVI F160—Internship in Environmental Studies....1 – 2
   ENVI F260—Field Techniques for Environmental Technicians....2
   ENVI F265—Introduction to Methods in Environmental Studies....2
   GEOG F111X—Earth and Environment: Elements of Physical Geography....4
5. Complete 3 – 4 credits from the following electives:
   BIOL F104X—Natural History of Alaska....4
   BIOL F115X—Fundamentals of Biology I....4
   CHEM F104X—Beginnings in Biochemistry....4
   CHEM F105X—General Chemistry I....4
   DEVS F100—Introduction to Science....4
   FISH F101—Introduction to Fisheries....3
   HLRM F130—Research Field Logistics....2
   NRM F101—Natural Resources Conservation and Policy....3
   RD F250—Grant Writing for Community Development....1 – 3
   STAT F200X—Elementary Probability and Statistics**....3
   Advisor approved elective***....1 – 3
6. Minimum credits required....34 – 39

* *Students must earn a C grade (2.0) or better in each course.*
** *Cannot be used for elective credit if used as computational credit.*
*** *Similar level and subject matter.*

ETHNOBOTANY

College of Rural and Community Development
Community and Technical College
Kuskokwim Campus
907-543-4500
Toll-free: 800-478-5822
www.bethel.uaf.edu

Certificate

Minimum Requirements for Certificate: 30 – 32 credits

The ethnobotany certificate program involves interdisciplinary study of the role of native plants in indigenous cultures. Students will learn about native plants and their uses and ecology in the context of their cultural, social and economic importance by combining scientific and anthropological concepts and methods. The program emphasizes culturally relevant, place-based courses that highlight the ways this information contributes to other fields of study, such as cultural and natural resource management, community development, adaptive resilience, and human health. It is also designed to serve as a bridge to a variety of associate and baccalaureate programs in natural sciences and liberal arts.

This program may be especially of interest to individuals employed by or interested in employment with state, federal or tribal agencies or other local entities in rural Alaska which provide natural resource management services.

Admission requires a high school diploma or GED and interest in science-related fields. It is highly recommended that students have completed two high school lab-based science courses, preferably in biology, chemistry or physics.

Students whose ACT/SAT scores are not sufficient for placement into college level courses will be required to take the ASSET or ACCUPLACER test and will be placed into the appropriate developmental level course.

UA is an AA/EO employer and educational institution and prohibits illegal discrimination against any individual: www.alaska.edu/titleIXcompliance/nondiscrimination.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements (page 95).*
3. Complete the following requirements:
   a. Complete one of the following communication courses:
      ENGL F111X—Introduction to Academic Writing (3)
      or ABUS F170—Business English (3) 3
   b. Complete one of the following computation courses:
      DEVM F105—Intermediate Algebra (3)
      or MATH F103X—Concepts and Contemporary Applications of Mathematics (3)
      or MATH F107X—Functions of Calculus (4) ..... 3 – 4
   c. Complete the following human relations courses:
      ANTH/SOC F100X—Individual, Society and Culture 3
      ABUS F154—Human Relations 3
4. Complete the following program requirements:*
   a. Complete two science foundation courses:
      BIOL F103X—Biology and Society (4)
      or BIOL F104X—Natural History of Alaska (4)
      or BIOL F116X—Fundamentals of Biology II (4) 4
      and
      CHEM F103X—Basic General Chemistry (4)
      or CHEM F105X—General Chemistry I (4) 4
   b. Complete the following:
      EBOT F100—Introduction to Ethnobotany 3
      EBOT F200—Seminar in Ethnobotany 1
      EBOT F210—Ethical Wildcrafting 1
      EBOT F220—Ethnobotanical Techniques 2
      EBOT F230—Ethnobotanical Chemistry 3
   c. Complete 3 – 4 credits of approved electives ..... 3 – 4
      ENGL F212—Business, Grant and Report Writing (3)
      or ENGL F213X—Academic Writing About the Social and Natural Sciences 3
      or 100 – 200-level advisor-approved electives from the following subject areas:
      Alaska Native Languages, Alaska Native Studies, Applied Art, Anthropology, Economics, Education, Eskimo, Biology or Natural Resource Management
5. Minimum credits required ..... 30 – 32

* *Students must earn a C grade (2.0) or better in each course.*

HEALTH, ALLIED

College of Rural and Community Development
Rural Health Programs
907-455-2050
http://ruralhealth.uaf.edu
Community and Technical College
907-455-2822
www.ctc.uaf.edu/programs/health/

Certificate; A.A.S. Degree

Minimum Requirements for Certificate: 30 – 38 credits; for Degree: 60 – 69 credits

The occupational endorsement, certificates, degrees and occupational training programs in allied health provide students with the knowledge and technical skills for employment in health care. Course work in phlebotomy is available, as are occupational endorsements in medical billing, medical coding, and medical office reception. Certificates offered include medical assistant, dental assistant, health care reimbursement and medical/dental reception. A.A.S. degrees offered include dental assistant and medical assistant. A.A.S. degrees in nursing and radiologic technology are offered in Fairbanks at the Community and Technical College through the University of Alaska Anchorage.

Special admission, licensing, or certification requirements may apply to students in this program. Applicants should familiarize themselves with these and speak with a faculty advisor if they have any questions or concerns.

Dental Assistant

The dental assistant certificate and A.A.S. degree programs prepare students to become skilled members of the dental health care team. The duties of the dental assistant are among the most comprehensive and varied in the dental office. Upon completion of the course work, students are eligible to take the Dental Assisting National Board (DANB) examination components for radiology and infection control. After 600 hours or six months employment in a dental office, they will be eligible to take the general chairside component of the examination and become Certified Dental Assistants. Prerequisites are graduation from high school or equivalent (GED) and completion of a dental assisting application form.

Health Care Reimbursement

The health care reimbursement certificate program prepares students for employment as medical billers and coders in medical offices, clinics, hospitals and other medical facilities. Students in the program learn analysis of medical records and the assigning of codes for indexing diagnoses and procedures to provide information for reimbursement purposes. The successful completion of this certificate prepares the student for the national certification exam through the American Academy of Professional Coders. The occupational endorsements in medical billing and medical coding are part of the Health Care Reimbursement Certificate.

Medical Assistant, Medical/Dental Reception

The medical assistant certificate and A.A.S. degree programs prepare students for employment in ambulatory care settings. Students receive education in the theory and skills for both office work and clinical care. Prerequisites for the program include a high school diploma or GED and completion of the medical assistant application. The UAF Community and Technical College medical assistant certificate is accredited by the Commission on Accreditation of Allied Health Education Programs upon recommendation of the Medical Assisting Education Review Board (MAERB), CAAHEP, 353 East Wacker Drive, Chicago, IL 60601, 312-553-9355. The medical assistant certificate incorporates both the medical office reception occupational endorsement and the medical/dental reception certificate.

Phlebotomist

Training is also available in phlebotomy. A student who completes the two-course sequence in phlebotomy may sit for national certification through the American Society for Clinical Pathology to become a certified Phlebotomy Technician. Students wishing to enroll in phlebotomy must document current immunizations for measles, mumps, rubella, tetanus and hepatitis A, show a positive antibody titer for chickenpox and hepatitis B, and have received a negative PPD for tuberculosis within the past year.

Nursing Qualifications, Pre-

The Allied Health certificate in pre-nursing qualifications is designed to guide students preparing to apply to the University of Alaska Anchorage associate of applied science in nursing. The certificate includes all of the prerequisite and co-requisite courses for the A.A.S. in nursing in addition to a clinical course. Admission to this certificate program requires a high school diploma or GED and test scores sufficient for placement into ENGL F111X and DEVM F060.

Admission to the UAA nursing program is competitive. While this certificate prepares the student to be highly qualified, it does not guarantee admission to the UAA nursing program. Before applying

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to the UAA A.A.S. program in nursing, students must complete the Nurse Entrance Test and are strongly encouraged to work in a clinical practice. Students should work closely with an advisor while completing this certificate and preparing an application for admission to the nursing program.

Students who have not completed high school chemistry will need to complete either CHEM F100X or CHEM F103X. Students who have not completed high school algebra must take DEVM F105 or MATH at the 100-level or higher. Students who have completed high school algebra may take HLTH F116 to review computation skills used in the medical field.

Registered Nurse

The A.A.S. degree in nursing is offered by the University of Alaska Anchorage at the Community and Technical College in cooperation with the Allied Health department. Graduates of the nursing program are prepared to provide effective nursing services to individuals receiving care in inpatient settings and in structured outpatient settings. The academic program provides students with a closely related mix of theory and clinical practice; students gain experience in hospitals, nursing homes, clinics and community agencies. Graduates of this A.A.S. degree are eligible to take the NCLEX examination that grants professional licensure to practice nursing as a Registered Nurse. Additional information is available online at http://nursing.uaa.alaska.edu.

Radiologic Technologist

The A.A.S. degree in radiologic technology is offered by the University of Alaska Anchorage in cooperation with the Community and Technical College and Fairbanks Memorial Hospital. Course work for the degree is delivered through a combination of the traditional classroom setting, distance delivery and clinical experience. Upon completion of the program, students may apply to the American Registry of Radiologic Technologists (ARRT) for national certification. Additional information is available online at www.uaa.alaska.edu/ctc/programs/alliedhealth/radtech/.

Information on any of the Allied Health programs is available from the Allied Health Division at Community and Technical College, PO Box 758040, Fairbanks, AK 99775; by calling 907-455-2822; by email at fyhealth@uaf.edu; or at www.ctc.uaf.edu/health/.

Dental Assistant — Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements. (See page 95. As part of the certificate requirements, the communication, computation and human relations content is embedded in the major required courses for this program.)
3. Complete the following program (major) requirements:*
   DA F132—Administrative Procedures for the Dental Assistant 2
   DA F150—Dental Radiography 4
   DA F151—Dental Infection Control 2
   DA F152—Dental Materials and Applications 4
   DA F153—Anatomy for Dental Assistants 3
   DA F251—Clinical Chairside I for Dental Assistants....6
   DA F252—Clinical Chairside II for Dental Assistants 6
   DA F254—Dental Assistant Practicum....4
   HLTH F110—Professional Skills for the Workplace 2
   HLTH F122—First Aid and CPR....1
4. Minimum credits required....34

* *Students must earn a C grade (2.0) or better in each course.*

Health Care Reimbursement — Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements. (See page 95. As part of the certificate requirements, the communication and human relations content are embedded in the major required courses for this program.)
3. Complete the following computation requirement:*
   HLTH F116—Mathematics in Health Care 3
4. Complete the following:*
   ABUS F271—Business Communications 3
   CIOS F150—Computer Business Applications 3
   HLTH F100—Medical Terminology 3
   HLTH F110—Professional Skills for the Workplace 2
   HLTH F132—Administrative Procedures I 2
   HLTH F208—Human Diseases....3
   HLTH F234—Administrative Procedures II 4
   HLTH F235—Medical Coding....4
   HLTH F236—Outpatient Health Care Reimbursement 3
5. Minimum credits required....30

* *Students must earn a C grade (2.0) or better in each course.*

Medical Assistant — Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements (page 95).
   a. Complete ENGL F111X for the communications requirement.
   b. Complete 3 credits from one of the following computation courses:
      HLTH F116—Mathematics in Health Care 3
      DEVM F105—Intermediate Algebra 3
      MATH at the 100-level of higher 3
   c. Complete 3 credits from one of the following human relations courses:
      HLTH F106—Human Behavior in Health Care....3
      ABUS F154—Human Relations....3
      SOC F100X—Individual, Society and Culture....3
      PSY F101—Introduction to Psychology....3
3. Complete the following program (major) requirements:*
   HLTH F100—Medical Terminology 3
   HLTH F110—Professional Skills in the Workplace....2
   HLTH F114—Fundamentals of Anatomy and Physiology (4)
   or BIOL F100X—Human Biology (4)....4
   HLTH F118—Medical Law and Ethics....2
   HLTH F122—First Aid and CPR....1
   or current First Aid/CPR card
   HLTH F132—Administrative Procedures I 2
   HLTH F142—Clinical Procedures I....4
   HLTH F234—Administrative Procedures II 4
   HLTH F236—Healthcare Reimbursement....3
   HLTH F244—Clinical Procedures II 4
   HLTH F268—Medical Assisting Practicum (4)
   or HLTH F261—Medical/Dental Office Reception Practicum (2)
   and HLTH F267—Medical Assisting Externship Completion (2 – 4) 4
4. Minimum credits required....38 – 42

* *Students must earn a C grade (2.0) or better in each course.*

Medical/Dental Reception — Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the following certificate requirements:*
   a. Complete 3 credits from one of the following communication courses:
      ABUS F271—Business Communications (3)
      or ENGL F111X—Introduction to Academic Writing (3).....3
   b. Complete 3 credits from one of the following computation courses:
      MATH at the F100-level or above (3)
      or HLTH F116—Mathematics in Health Care (3) 3

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www.alaska.edu/titleIXcompliance/nondiscrimination.

c. Complete the following human relations course:
HLTH F106—Human Behavior in Health Care.....3

3. Complete the following:*
CIOS F150—Computer Business Applications (3)
or CIOS elective at the F200-level (3).....3
HLTH F100—Medical Terminology.....3
HLTH F110—Professional Skills for the Workplace.....2
HLTH F118—Medical Law and Ethics.....2
HLTH F122—First Aid and CPR.....1
HLTH F132—Administrative Procedures I.....2
HLTH F234—Administrative Procedures II.....4
HLTH F236—Healthcare Reimbursement.....3
HLTH F261—Medical/Dental Office Reception Practicum.....2
Approved HLTH, CIOS, ABUS, HUMS, DEVS or COMM elective.....2

4. Minimum credits required.....30 – 33

* *Students must earn a C grade (2.0) or better in each course.*

Nursing Qualifications, Pre- — Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements (page 95). As part of the certificate requirements, complete:
Communications
ENGL F111X—Introduction to Academic Writing.....3
Computation
DEVM F105—Intermediate Algebra (3)
or HLTH F116—Mathematics in Healthcare (3)
or MATH at the 100 level or higher (3).....3
Human Relations
PSY F101—Introduction to Psychology.....3
3. Complete the following program requirements:*
ENGL F211X—Academic Writing about Literature (3)
or ENGL F213X (preferred)—Academic Writing About the Social and Natural Sciences (3).....3
COMM F131X—Fundamentals of Communication: Group Context (3)
or COMM F141X—Fundamentals of Communication: Public Context (3).....3
PSY F240—Lifespan Developmental Psychology.....3
HTLH F203—Science of Nutrition.....3
BIOL F111X—Human Anatomy and Physiology.....4
BIOL F112X—Human Anatomy and Physiology II.....4
BIOL F240—Beginnings in Microbiology.....4
4. Complete one of the following clinical courses (4 – 9 credits)
HLTH F107—Nurse Aide Training.....9
HLTH F111—Personal Care Attendant.....4
HLTH F113—PCA to CNA Bridge.....5
EMS F170—Emergency Medical Technician I.....6
or other approved clinical course
5. Minimum credits required.....37 – 42

* *Students must earn a C grade (2.0) or better in each course.*

Dental Assistant — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete the following program (major) requirements:*
DA F132—Administrative Procedures for the Dental Assistant 2
DA F150—Dental Radiography.....4
DA F151—Dental Infection Control.....2
DA F152—Dental Materials and Applications.....4
DA F153—Anatomy for Dental Assistants.....3
DA F251—Clinical Chairside I for Dental Assistants.....6
DA F252—Clinical Chairside II for Dental Assistants.....6
DA F253—Clinical Chairside III for Dental Assistants.....3
DA F254—Dental Assistant Practicum.....4
HLTH F110—Professional Skills for the Workplace.....2
HLTH F114—Fundamentals of Anatomy and Physiology.....4
HLTH F122—First Aid and CPR.....1
or first aid/CPR card
HLTH F203—Science of Nutrition.....3
HLTH F247—Introduction to Pharmacology.....2
4. Minimum credits required.....61

* *Students must earn a C grade (2.0) or better in each course.*

Medical Assistant — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements* (page 97).
3. Complete the following program (major) requirements:*
CIOS F150—Computer Business Applications (3)
or appropriate CIOS elective (3).....3
HLTH F100—Medical Terminology.....3
HLTH F110—Professional Skills for the Workplace.....2
HLTH F114—Fundamentals of Anatomy and Physiology (4)
or BIOL F100X—Human Biology (4).....4
HLTH F118—Medical Law and Ethics.....2
HLTH F122—First Aid and CPR.....1
or current First Aid/CPR card
HLTH F132—Administrative Procedures I.....2
HLTH F142—Clinical Procedures I.....4
HLTH F208—Human Diseases.....3
HLTH F234—Administrative Procedures II.....4
HLTH F236—Healthcare Reimbursement.....3
HLTH F244—Clinical Procedures II.....4
HLTH F247—Introduction to Pharmacology.....2
HLTH F268—Medical Assisting Practicum (4)
or HLTH F261—Medical/Dental Office Reception Practicum (2)
and HLTH F267—Medical Assisting Externship Completion (2 – 4).....4
Approved HLTH, CIOS, ABUS, HUMS, DEVS or COMM elective.....3 – 7
4. Minimum credits required.....60

* *Students must earn a C grade (2.0) or better in each course.*

HIGH LATITUDE RANGE MANAGEMENT

College of Rural and Community Development
Northwest Campus
907-443-2201
www.nwc.uaf.edu

Certificate

Minimum Requirements for Certificate: 31 credits

A HLRM program certificate represents the completion of at least 31 credits in the conventional field-based techniques to inventory and monitor northern animal and plant populations combining traditional knowledge with contemporary studies necessary for entry-level natural resource jobs statewide. The certificate also emphasizes place-based domesticated ungulate husbandry and health, applicable regionally and statewide. This certificate may also serve as a bridge to a variety of natural science associate and baccalaureate programs

Admission is open to all individuals, especially those employed by or interested in employment with state, federal or tribal agencies or other local entities in rural Alaska which provide natural resources management services.

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Students should have a high school diploma or GED and an interest in science-related fields. It is strongly recommended that students seeking admission to this program have completed two high school, lab-based science courses preferably in biology, chemistry or physics.

Students whose ACT/SAT scores are not high enough to place them into regular college level classes will be required to take the ASSET or COMPASS test and will be placed into the appropriate developmental level course.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements (page 95)*.
3. Complete the following requirements:
   a. Complete the following communication course:
      ENGL F111X—Introduction to Academic Writing.....3
   b. Complete one of the following computation courses:
      MATH F103X—Concepts and Contemporary Applications of Mathematics (3)
      or ABUS F155—Business Math (3) 3
   c. Complete one of the following human relations courses:
      ANTH/SOC F100X—Individual, Society, and Culture (3)
      or ABUS F154—Human Relations (3).....3
4. Complete the following program (major) requirements:*
   NRM F101—Natural Resources Conservation and Policy 3
   BIOL F104X—Natural History of Alaska (4)
   or BIOL F104—Natural History of Alaska (3)
   and BIOL F104L—Natural History of Alaska Laboratory (1).....4
   HLRM F120—History of Domesticated Alaskan Ungulates.....1
   HLRM F130—Research Field Logistics.....2
   HLRM F140—High Latitude Range Management.....2
   HLRM F150—Alaskan Ungulate Husbandry 2
   HLRM F160—Meat Production.....2
   HLRM F170—Health Issues in Domestic Herds 2
   HLRM F201—Field Techniques for Range Management 2
   HLRM F205—Research Methods in Range Management.....2
5. Minimum credits required.....31

* *Students must earn a C grade (2.0) or better in each course.*

HUMAN SERVICES

College of Rural and Community Development
Bristol Bay Campus 907-842-5109
Chukchi Campus 907-442-3400
Interior-Aleutians Campus 907-474-5439
Kuskokwim Campus 907-543-4500
Northwest Campus 907-443-2201
Rural Behavioral Health 866-955-2050
Community and Technical College 907-455-2882
Human Services Program 907-455-2842
www.ctc.uaf.edu/programs/hums/

A.A.S. Degree

Minimum Requirements for Degree: 63 credits

Students in the human services program receive skills-based training within a foundation of theory. After completing foundation courses, students select an area of concentration from the following: addictions counseling, behavioral health, or interdisciplinary concentration. Students learn interviewing and assessment, case management, crisis intervention, group counseling techniques and other specific skills needed within their concentration area.

The program prepares students for entry-level positions in human services agencies. Persons with a strong desire to help others, a sincere respect for mankind and a commitment to their own personal growth may find this field rewarding. They must be emotionally stable, flexible and interested in working with people of diverse social, cultural and economic backgrounds. Recovery from life traumas and addictions can be a positive attribute if the student has successfully worked through specific issues and is willing to continue personal growth.

Students who complete an addictions concentration are eligible for certification as chemical dependency counselor technicians through the Alaska Commission for Behavioral Health Certification.

Each concentration is available to B.A. degree students as a minor. The B.A. degree student must complete the concentration and three HUMS elective credits. Concentrations provide students with skills needed for employment. See minor requirements.

This degree program is delivered collaboratively within the UA system.

Major — A.A.S. Degree

Concentrations: Addictions Counseling, Behavioral Health and Interdisciplinary Concentration

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete the following:*
   HUMS F101—Introduction to Human Services.....3
   HUMS F102—Standards of Practice I.....2
   HUMS F120—Cultural Diversity in Human Services 3
   HUMS F125—Introduction to Addictive Processes 3
   HUMS F202—Standards of Practice II 1
   HUMS F215—Individual Interviewing.....3
   HUMS F232—Human Service Practicum I 3
   HUMS F233—Human Service Practicum II 3
   HUMS F301—Ethics in Human Service.....3
   PSY 101—Introduction to Psychology 3
4. Complete one of the following family courses for Addictions Counseling and Interdisciplinary Concentration:*
   ECE F342O—Family Relationships 3
   HUMS F140—Family Empowerment I 3
   RHS F120—Family Systems I.....2
   PSY F240—Lifespan Developmental Psychology 3
5. Complete one of the following courses for Addictions Counseling and Interdisciplinary Concentration:*
   HUMS F205—Basic Principles of Group Counseling 3
   HUMS F210—Crisis and Grief Counseling.....3
   HUMS F310—Management of Complex Cases.....3
   Complete two of the following courses for the Behavioral Health concentration:*
   HUMS F205—Basic Principles of Group Counseling 3
   HUMS F210—Crisis and Grief Counseling.....3
   HUMS F310—Management of Complex Cases.....3
6. Complete one of the following concentrations*:

Addictions Counseling

   a. Complete the following:
      HUMS F105—Personal Awareness and Growth.....3
      HUMS F205—Basic Principles of Group Counseling 3
      HUMS F260—History of Alcohol in Alaska.....1
      HUMS F261—Substance Abuse Assessment: ASAM PPC II 1
      HUMS F263—Fetal Alcohol Spectrum Disorder (FASD).....1
      HUMS F266—Dual Diagnosis Intervention and Treatment.....2
      HUMS F305—Substance Abuse Counseling 3
      HUMS F250—Current Issues in Human Services.....1
      or any 1 credit course approved by the Human Services Program.....1

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www.alaska.edu/titleIXcompliance/nondiscrimination.

Behavioral Health

a. Complete the following:
HUMS F280—Foundations of Community Development and Prevention Practices for the Human Service Professional 3
HUMS F290—Case Management 3
HUMS F305—Substance Abuse Counseling 3
SOC F242—The Family: A Cross-Cultural Perspective (s) 3
b. Complete 3 elective credits (approved by Human Services Program Coordinator) 3
c. If the student is a social work or justice major, then choose one of the following in place of an elective:
Social Work Majors:
SWK F103—Introduction to Social Work (s) 3
Justice Majors:
JUST F110—Introduction to Justice (s) 3

Interdisciplinary Concentration

a. The interdisciplinary concentration option is made available to students based on their individual needs and goals for specific vocational preparation. The interdisciplinary concentration will include 12 credits at the F200 level or above from the disciplines of social work, psychology, sociology, justice or human services. Three credits from these disciplines can be at the F100 level.
b. The interdisciplinary concentration will be reviewed and approved by the Human Services Program Coordinator, another human services faculty member and a faculty member representing at least one other discipline. Criteria for the approval of the interdisciplinary concentration is based on the candidate's identified vocational and curricular needs.
- Examples:
  HUMS or other acceptable courses that meet a student's specific need: Workforce Specialty, Family Specialty, Restorative Justice, etc.
- Courses or a certificate from the UA system (UAA, RHS, PWSCC, etc.) that is aligned with the human services degree program.
- Example of possible interdisciplinary concentration of human services in restorative justice:
  HUMS F210—Crisis and Grief Counseling 3
  HUMS F290—Case Management 3
  JUST F110—Introduction to Justice 3
  JUST F251—Criminology 3
  SOC F201—Social Problems (s) 3

7. Minimum credits required 63

* *Students must earn a C grade (2.0) or better in each course.*

For students with the Rural Human Services Certificate (up to 21 credits accepted as a block of courses):*

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete the following:*
HUMS F101—Introduction to Human Services 3
HUMS F102—Standards of Practice 2
HUMS F202—Standards of Practice II 1
HUMS F233—Human Service Practicum II 3
HUMS F301—Ethics in Human Service 3
PSY F101—Introduction to Psychology 3
PSY F240—Lifespan Developmental Psychology 3
4. Complete three of the following courses:*
HUMS F280—Foundations of Community Development and Prevention Practices for the Human Services Professional 3
HUMS F290—Case Management 3
HUMS F305—Substance Abuse Counseling 3
HUMS F250—Current Issues in Human Services 3
or other approved course 3
5. Optional (For B.A. Seeking Students):
Social Work Majors: SWK F103—Introduction to Social Work (s) 3
or other Social Work approved course 3
Justice Majors: JUST F110—Introduction to Justice (s) 3
6. Minimum credits required 63

* *Students must earn a C grade (2.0) or better in each course.*

Minor

1. Complete one concentration in human services 15
2. Complete HUMS elective credits 3
3. Minimum credits required 18

Note: The Alaska Commission for Behavioral Health Certification has approved the following courses for up to 45 training hours each toward certification or recertification of Chemical Dependency Counselors in the state of Alaska.

4. HUMS F125—Introduction to Addictive Processes 3
HUMS F205—Basic Principles of Group Counseling 3
HUMS F210—Crisis and Grief Counseling 3
HUMS F215—Individual Interviewing 3
HUMS F260—History of Alcohol in Alaska 1
HUMS F301—Ethics in Human Service 3
HUMS F305—Substance Abuse Counseling 3

Note: Chemical Dependency Counselors currently certified by the Alaska Commission for Behavioral Health Certification are eligible for transfer credit toward the human services degree. Contact the human services program coordinator at 907-455-2842 for more information.

INFORMATION TECHNOLOGY SPECIALIST

College of Rural and Community Development
Community and Technical College 907-455-2800
Department of Computer and Information Technology Systems
www.ctc.uaf.edu/its/

Certificate; A.A.S. Degree

Minimum Requirements for Certificate: 30 credits;
for A.A.S. Degree: 60 – 61 credits

The Information Technology Specialist certificate and associate programs teach students how to use, support, implement, and troubleshoot the computer and information technology systems found in educational, governmental and corporate settings.

The certificate program focuses on foundation-level support skills required to effectively use and troubleshoot computer and information technology systems. Students completing the certificate program will be prepared for entry-level IT positions and to continue their education in the Information Technology Specialist A.A.S. degree program.

The A.A.S. degree program prepares individuals to implement, support, and troubleshoot computer and information technology systems and obtain employment as an IT professional. Associate degrees in computer technology support, network and system administration, and web development and administration are offered.

Students entering either the certificate or A.A.S. degree program should meet with a faculty advisor to discuss program content requirements and develop an education plan that matches the current skills and goals of the student.

This degree program is delivered collaboratively within the UA system.

Certificate Program

1. Complete the general university requirements (page 93).

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2. Complete the certificate requirements. (See page 95. As part of the certificate requirements, complete ABUS F154 or ANTH F100X/SOC F100X for the human relations requirement.)

3. Complete the following program (major) requirements*:
   a. Complete the following IT support foundation courses:
   CITS F201—Microcomputer Operating Systems Support (3)
   and CITS F202—Microcomputer Hardware Support (3)
   or CITS F203—Information Technology Support Fundamentals 4-6
   CITS F204—Introduction to Network Support and Administration.....3
   CITS F212—Server Operating Systems.....3
   CITS F261—Computer and Information Security 3
   b. Complete 9 credits from the following or program coordinator approved:
   CIOS F128—Using and Configuring PC Operating Systems (3)
   CIOS F130—Microcomputer Word Processing (3)
   CIOS F133— Microcomputer Presentation Software (3)
   CIOS F135—Microcomputer Spreadsheets (3)
   CIOS F146—Using Internet Tools and Technologies (3)
   CIOS F150—Computer Business Applications (3)
   CIOS F189—Microcomputer Applications: Topics (3)**
   CIOS F233—Desktop Publishing (3)
   CIOS F240—Microcomputer Databases (3)
   CIOS F255—Microcomputer Graphics (3)
   CIOS F258—Digital Photography (3)
   CITS F219—Microcomputer Operating Systems: Topics (3)**
   CITS F220—Implementing Internet Tools and Technologies (3)
   CITS F221—Graphics and Multimedia for the Web (3)
   CITS F222—Internet Authoring and Design (3)
   CITS F240—System and Network Services Administration (3)
   CITS F265—Directory Services Administration (3)
   CITS F282—IT Troubleshooting Skills (3)
   CITS F289—Information Technology: Topics (1-3).....9

4. Pass a certification review requiring students to demonstrate proficiency in the following skill areas: operating systems, hardware, and network support and troubleshooting.***

5. Minimum credits required.....30

Major — A.A.S. Degree

Concentrations: Computer Technology Support, Network and System Administration, Web Development and Administration

Computer Technology Support

1. Complete the general university requirements (page 93).

2. Complete the A.A.S. degree requirements. (See page 97. As part of the A.A.S. degree requirements, complete DEVM F105 or any course at the F100-level or above in mathematical sciences (computer science, math or statistics) for the computation requirement, and ABUS F154, ANTH F100X/SOC F100X for the human relations requirement.

3. Complete the following program (major) requirements:*
   a. Complete the following computer technology support courses:
   CITS F201—Microcomputer Operating Systems Support (3)
   and CITS F202—Microcomputer Hardware Support (3)
   or CITS F203—Information Technology Support Fundamentals (4) 4-6
   CITS F204—Introduction to Network Support and Administration(3)
   or CITS F241—Networking and LAN Infrastructure Basics..... 3-4
   CITS F205—Introduction to Microcomputer Programming (3)
   or CS F103—Introduction to Computer Programming (3)
   or CS F201—Computer Science I (3).....3
   CITS F212—Server Operating Systems.....3
   CITS F261—Computer and Information Security 3
   b. Complete 15-16 credits from the following or program coordinator approved:
   CITS F219—Microcomputer Operating Systems: Topics ** (3)
   CITS F220—Implementing Internet Tools and Technologies (3)
   CITS F221—Graphics and Multimedia for the Web (3)
   CITS F222—Internet Authoring and Design (3)
   CITS F224—Web Scripting (3)
   CITS F225—Web Databases and Programming (3)
   CITS F228—Advanced Website Design and Development (3)
   CITS F240—System and Network Services Administration (3)
   CITS F241—Networking and LAN Infrastructure Basics (4)
   CITS F242—Routers and Routing Concepts (4)
   CITS F243—Intermediate Networking and LAN Infrastructure (4)
   CITS F244—Advanced Networking Infrastructure Services (4)
   CITS F249—Networking and Communications: Topics** (3)
   CITS F265—Directory Services Administration (3)
   CITS F282—IT Troubleshooting Skills (3)
   CITS F289—Information Technology: Topics (1-3) **..... 15-16
   c. Complete the following IT professional courses:
   CITS F281—Computer Technical Support.....3
   CITS F284—Independent Project (3)
   or CITS F285—Cooperative Work Experience (3) 3

4. Complete CIOS, CITS or CS electives 6

5. Complete general electives 0-3

6. Pass a certification review requiring students to demonstrate proficiency in the following skill areas: operating systems and hardware support and troubleshooting; network support and troubleshooting; independent thinking; human relations and support; and professional practices.***

7. Minimum credits required.....60

Network and System Administration

1. Complete the general university requirements (page 93).

2. Complete the A.A.S. degree requirements. (See page 97. As part of the A.A.S. degree requirements, complete DEVM F105 or any course at the F100-level or above in mathematical sciences (computer science, math or statistics) for the computation requirement, and ABUS F154, ANTH F100X/SOC F100X for the human relations requirement.

3. Complete the following program (major) requirements:*
   a. Complete the following system administration courses:****
   CITS F204—Introduction to Network Support and Administration.....3
   CITS F205—Introduction to Microcomputer Programming (3)
   or CS F103—Introduction to Computer Programming (3)
   or CS F201—Computer Science I.....3
   CITS F212—Server Operating Systems (3).....3
   CITS F240—System and Network Services Administration 3
   CITS F261—Computer and Information Security 3
   CITS F265—Directory Services Administration.....3
   b. Complete the following network infrastructure courses:
   CITS F241—Networking and LAN Infrastructure Basics 4
   CITS F242—Routers and Routing Concepts.....4
   CITS F243—Intermediate Networking and LAN Infrastructure 4
   CITS F244—Advanced Network Infrastructure Services.....4
   c. Complete the following IT Professional courses:
   CITS F281—Computer Technical Support.....3
   CITS F284—Independent Project (3)
   or CITS F285—Cooperative Work Experience 3

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d. Complete 6 credits of CIOS, CITS or CS electives 6

4. Pass a certification review requiring students to demonstrate proficiency in the following skill areas: network infrastructure and system administration skills, independent thinking skills, human relations and support skills, and professional practices.***

5. Minimum credits required 61

Web Development and Administration

1. Complete the general university requirements (page 93).

2. Complete the A.A.S. degree requirements. (See page 97. As part of the A.A.S. degree requirements, complete DEVM F105 or any course at the F100-level or above in mathematical sciences (computer science, math or statistics) for the computation requirement, and ABUS F154, ANTH F100X/SOC F100X for the human relations requirement.

3. Complete the following program (major) requirements:*
   a. Complete the following system administration courses:****
      CITS F204—Introduction to Network Support and Administration 3
      CITS F205—Introduction to Microcomputer Programming (3) or CS F103—Introduction to Computer Programming (3) or CS F201—Computer Science I 3
      CITS F212—Server Operating Systems 3
      CITS F240—System and Network Services Administration 3
      CITS F261—Computer and Information Security 3
      CITS F265—Directory Services Administration 3
   b. Complete the following web development courses:
      CITS F220—Implementing Internet Tools and Technologies ...3
      CITS F221—Graphics and Multimedia for the Web 3
      CITS F222—Internet Authoring and Design 3
      CITS F224—Web Scripting 3
      CITS F225—Web Databases and Programming 3
      CITS F228—Advanced Website Design and Development 3
   c. Complete the following IT Professional courses:
      CITS F281—Computer Technical Support 3
      CITS F284—Independent Project (3) or CITS F285—Cooperative Work Experience 3
   d. Complete 3 credits of CIOS, CITS or CS electives 3

4. Pass a certification review requiring students to demonstrate proficiency in the following skill areas: web development and system administration skills, independent thinking skills, human relations and support skills, and professional practices.

5. Minimum credits required 60

* *Students must earn a C grade (2.0) or better in each course.*

** *May be repeated for different topics.*

*** *Prior to graduation, all students are required to pass a certification review that includes a hands-on scenario task and the development and presentation of a portfolio of work.*

**** *Students are expected to have completed CITS F201 and F202 or CITS F203 or possess equivalent skills prior to beginning course work in this area.*

Note: Upon admission to the certificate or degree program, each student will be assigned a mentor/committee chairperson who will be responsible for determining the student's current level of competency in the various skill areas; assisting the student in determining the courses/experiences necessary for gaining competency in the deficient skill areas; setting up the student's committee to consist of the mentor and at least one other individual who may be a UA faculty member, an adjunct faculty member, or an expert in the student's community; arranging for practical experiences in the student's community; and organizing the committee's final assessment of the student's work and recommending award of the certificate or degree.

INSTRUMENTATION TECHNOLOGY

College of Rural and Community Development
Community and Technical College
907-455-2906
www.ctc.uaf.edu/programs/inst/

Certificate

Minimum Requirements for Certificate: 32 Credits

The instrumentation technology program will develop entry-level skills in industrial instrumentation. Courses combine the technical know-how, the use of state-of-the-art equipment and hands-on experience necessary for work in a variety of industrial instrumentation fields.

Students are taught the necessary objectives and skills sets required to take the entry-level Instrumentation, Systems and Automation Society certificate examination. This is a nationally recognized certification by industry partners; individuals holding this certification are sought after by industry partners to fill instrumentation technician positions worldwide.

As the process industries expand and automate, the need for qualified technicians increases. This need is currently being addressed by the Industrial Instrumentation & Controls Technology Alliance. CTC and the process technology program are active members of this national alliance.

Certificate Program

1. Complete the general university requirements (page 93).

2. Complete the certificate requirements (page 95).

3. Complete the following program requirements:
   ELT F101—Basic Electronics: DC Physics 4
   ELT F102—Basic Electronics: AC Physics 4
   ELT F246—Electronic Industrial Instrumentation 3
   PRT F140—Industrial Process Instrumentation I 3
   PRT F144—Industrial Process Instrumentation II 3
   PRT F240—Industrial Process Instrumentation III 3
   PRT F248—Valve Maintenance and Instrumentation 3

4. Minimum credits required 32

INTERDISCIPLINARY STUDIES

Office of Interdisciplinary Programs
907-474-7716
fyinds@uaf.edu
www.uaf.edu/gradsch/classes/interdisciplinary-program/

A.A.S. Degree

Minimum Requirements for Degree: 60 credits

The interdisciplinary program provides flexibility to undergraduate and graduate students who have well-defined goals that do not fit into one of the established majors offered by the university. Interdisciplinary Studies, both graduate and undergraduate programs, is located in the Graduate School office. Help with the application process, contact information for faculty advisors and assistance for interdisciplinary students is available at 907-474-7716 or see www.uaf.edu/gradsch/classes/interdisciplinary-program/.

Major — A.A.S. Degree

1. Contact the UAF Office of the Graduate School and Interdisciplinary Programs for materials and procedures.

2. Contact three faculty members to serve as the interdisciplinary studies committee.

3. Prepare rationale/justification letter.

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4. Conduct committee meeting to finalize degree proposal, title of degree and assessment plan.
5. Submit proposal to appropriate dean for approval.
6. Submit to the vice provost for final approval.
7. Minimum credits required 60

MINING APPLICATIONS AND TECHNOLOGIES

College of Rural and Community Development
Community and Technical College
907-455-2906
www.ctc.uaf.edu/programs/protech/

Certificate

Minimum Requirements for Certificate: 31 or 37 credits

This program prepares students for employment in the mining technology industry and provides career development and personal enrichment for experienced miners and workers within the mineral industry. Possible career paths for certificate graduates include entry-level positions with exploration, mining, environmental and consulting companies.

Holders of this certificate will be trained to meet the anticipated demand for workers in open pit mining, surface coal mining, underground metal mining, sand and gravel, and placer mining. Two options are available: surface and underground mining techniques is intended for the miner, and mineral processing operations is intended for mineral process operators. After completing AMIT F109 and/or AMIT F129, students will receive the Mine Safety Health Association certificate. Contact the process technology department at 907-455-2868 for information on the MSHA certificate.

Certificate Program

Options: Surface and Underground Mining Techniques or Mineral Processing Operations

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements (page 95).
3. Complete the following program requirements for either option A or option B:

Option A: Surface and Underground Mining Techniques

AMIT F101—Introduction to Mining 3
AMIT F109—Underground Mine Safety 1
AMIT F110—Underground Mining I 3
AMIT F120—Explosives I 3
AMIT F129—Surface Mining Safety 1
AMIT F130—Surface Mining Operations 3
AMIT F155—Drilling Technology 3
AMIT F210—Underground Mining II 3
AMIT F220—Explosives II 3
AMIT F230—Field Methods 2

Option B: Mineral Processing Operations

AMIT F101—Introduction to Mining 3
AMIT F129—Surface Mining Safety 1
AMIT F130—Surface Mining Operations 3
AMIT F135—Introduction to Mining Systems and Equipment 4
AMIT F140—Environmental Permitting 1
AMIT F145—Introduction to Mineral Beneficiation 3
AMIT F154—Water Quality and Flocculants 3
AMIT F162—Geochemical Sampling 1
AMIT F230—Field Methods 2
AMIT F231—Heap Leaching 1
PRT F101—Introduction to Process Technology 3
PRT F110—Introduction to Occupational Safety, Health and Environmental Awareness 3
PRT F140—Industrial Process Instrumentation I 3

4. Minimum credits required ..... 31 or 37

NATIVE LANGUAGE EDUCATION

College of Liberal Arts
Department of Alaska Native Languages
907-474-7874
www.uaf.edu/anlc/classes/

Certificate; A.A.S. Degree

Minimum Requirements for Certificate: 30 credits; for Degree: 60 credits

The Native language education program trains teachers of Native language and culture, providing course work in Athabascan, Inupiaq Eskimo or Central Yup'ik Eskimo. The certificate and degree are recognized by some Alaska school districts and serve as steps toward a four-year degree. Candidates for the Central Yup'ik option must score advanced oral proficiency on an oral proficiency exam before being admitted into the program.

Certificate Program

Concentrations: Athabascan, Inupiaq Eskimo, Central Yup'ik Eskimo

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements. (See page 95. As part of the certificate requirements, the communication, computation, and human relations content is embedded in some of the major required courses for this program.)
3. Complete one of the following concentrations:*

Athabascan

a. Candidates must demonstrate proficiency or complete a two-semester sequence in the language of the degree.
b. Complete the following program (major) requirements:
ANL F108—Beginning Athabascan Literacy 3
ANL F199—Practicum in Native Language Education 6
ANL F208—Advanced Athabascan Literacy 3
ANL F251—Introduction to Athabascan Linguistics 3
ANL F256—Alaska Native Languages: History, Status and Maintenance 3
ANL F287—Teaching Methods for Alaska Native Languages 3
ANL F288—Curriculum and Materials Development for Alaska Native Languages 3
ED F299—Practicum in Education 6

Inupiaq Eskimo

a. Candidates must demonstrate proficiency or complete a two-semester sequence in the language of the degree.
b. Complete the following program (major) requirements:
ANL F199—Practicum in Native Language Education 6
ANL F256—Alaska Native Languages: History, Status and Maintenance 3
ANL F287—Teaching Methods for Alaska Native Languages 3
ANL F288—Curriculum and Materials Development for Alaska Native Languages 3
ED F299—Practicum in Education 6
ESK F118—Inupiaq Orthography 3
ESK F218—Inupiaq Composition 3
Eskimo linguistics elective 3

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Central Yup'ik Eskimo

a. Demonstrate advanced oral/aural proficiency in Yup'ik.
b. Complete the following program (major) requirements:
ESK F109—Orthography....3
ESK F130—Beginning Yup'ik Grammar....3
ESK F208—Yup'ik Composition....3
ESK F250—Yup'ik Literature for Children....3
ESK F251—Teaching Yup'ik Reading and Writing....3
ANL F199—Practicum in Native Language Education....3
ANL F256—Alaska Native Languages: History, Status and Maintenance....3
ANL F287—Teaching Methods for Alaska Native Languages....3
ANL F288—Curriculum and Materials Development for Alaska Native Languages....3
ED F299—Practicum in Education....3

4. Minimum credits required....30

Major — A.A.S. Degree

Concentrations: Athabascan, Inupiaq Eskimo, Central Yup'ik Eskimo

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete one of the following concentrations:*

Athabascan

a. Candidates must demonstrate proficiency or complete a two-semester sequence in the language of the degree.
b. Complete the following program (major) requirements:
ANL F108—Beginning Athabascan Literacy....3
ANL F199—Practicum in Native Language Education....6
ANL F208—Advanced Athabascan Literacy....3
ANL F251—Introduction to Athabascan Linguistics....3
ANL F256—Alaska Native Languages: History, Status and Maintenance....3
ANL F287—Teaching Methods for Alaska Native Languages....3
ANL F288—Curriculum and Materials Development for Alaska Native Languages....3
ED F299—Practicum in Education....6

Inupiaq Eskimo

a. Candidates must demonstrate proficiency or complete a two-semester sequence in the language of the degree.
b. Complete the following program (major) requirements:
ANL F199—Practicum in Native Language Education....6
ANL F256—Alaska Native Languages: History, Status and Maintenance....3
ANL F287—Teaching Methods for Alaska Native Languages....3
ANL F288—Curriculum and Materials Development for Alaska Native Languages....3
ED F299—Practicum in Education....6
ESK F118—Inupiaq Orthography....3
ESK F218—Inupiaq Composition....3
Eskimo linguistics elective....3

Central Yup'ik Eskimo

a. Demonstrate advanced oral/aural proficiency in Yup'ik.
b. Complete the following program (major) requirements:
ESK F109—Orthography....3
ESK F208—Yup'ik Composition....3
ESK F250—Yup'ik Literature for Children....3
ESK F251—Teaching Yup'ik Reading and Writing....3
ANL F199—Practicum in Native Language Education....3
ANL F256—Alaska Native Languages: History, Status and Maintenance....3
ANL F287—Teaching Methods for Alaska Native Languages....3
ANL F288—Curriculum and Materials Development for Alaska Native Languages....3
ED F299—Practicum in Education....3

4. Minimum credits required....60

* *Students must earn a C grade (2.0) or better in each course.*

See Alaska Native Languages

PARALEGAL STUDIES

College of Rural and Community Development
Community and Technical College
907-455-2835
www.ctc.uaf.edu/programs/paralegal/

A.A.S. Degree

Minimum Requirements for Degree: 61 credits

The paralegal studies program trains students for employment as paralegals to assist in the delivery of legal services under the supervision of a practicing lawyer, and provides continuing education and upgrading of skills for paralegals already employed. In addition, the program offers practical law-related topics for UAF students whose main focus is in other areas of study such as political science and justice.

Paralegals and legal assistants are not authorized to provide direct legal services to the public. However, they are qualified to perform rudimentary legal research and produce drafts of letters, office memoranda, pleadings, contracts, wills and similar documents. Paralegals conduct client and witness interviews, engage in basic fact-finding and investigation, and assist in trial preparation and discovery. At all times they remain cognizant of the ethical responsibilities owed by the supervising lawyer to clients, other lawyers and the court system.

The UAF paralegal studies program does not train lawyers or legal administrators. The associate (A.A.S.) degree is approved by the American Bar Association. The minor is not designed to prepare students to work as paralegals and is not approved by the American Bar Association.

Major — A.A.S. Degree

1. Complete ENGL F111X with a grade of C or better prior to admission to the program.
2. Complete the general university requirements (page 93).
3. Complete the A.A.S. degree requirements (page 97).
4. Complete the following:*
PLS F102—Introduction to the Law....3
PLS F103—Introduction to Paralegal Skills....3
PLS F105—Paralegal Ethics....2
PLS F210—Civil Procedure....3
PLS F260—Computers in the Law Office....3
PLS F280—Intermediate Legal Research and Writing for Paralegals....3
PLS F285—Advanced Legal Writing....2
PLS F299—Paralegal Studies Internship....3
PS F101—Introduction to American Government....3
5. Complete either:
PS F303—Politics and the Judicial Process (3)
or PS F300X—Ethics and Society (3)
or JUST F300X—Ethics and Justice (3)....3
6. Complete either:
PS F435W—Constitutional Law I: Institutions and Government Powers (3)
or PS F436—Constitutional Law II: Civil Rights and Civil Liberties (3)
or JRN F413—Mass Media Law (3)....3

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7. Complete five of the following:*
   PLS F203—Torts 3
   PLS F213—Criminal Law for Paralegals 3
   PLS F215—Contracts/Real Property 3
   PLS F240—Family Law 3
   PLS F242—Employment and Administrative Law for Paralegals 3
   PLS F250—Probate Law 3
   PLS F275—Business Organizations 3
   PLS F293—(special topics course) 3
8. Minimum credits required 61

* *Students must earn a C grade (2.0) or better in each PLS, PS, JUST or JRN course.*

Note: Students interested in the paralegal studies degree should consult the program coordinator before enrolling in paralegal courses. Transfer credits for paralegal courses completed at other institutions are subject to approval by the program coordinator. No more than 15 credit hours of paralegal courses completed at other institutions will be applied toward completion of the A.A.S. degree in paralegal studies at UAF.

Minor

1. Complete the following:
   PLS F102—Introduction to Paralegal Studies 4
   PLS electives 15
2. Minimum credits required 18

PILOTING, PROFESSIONAL

College of Rural and Community Development
Community and Technical College
907-455-2851
www.ctc.uaf.edu/programs/pilot/

A.A.S. Degree

Minimum Requirements for Degree: 60 credits

The professional piloting program offers a series of aviation piloting courses ranging from ground school classes for private through commercial flying, arctic survival, weather and aircraft maintenance. Rated pilots or military aviators may be eligible for credit based upon experience and FAA certificates, which may be applied towards an associate of applied science degree in professional piloting or a minor in aviation technology. See department personnel for details. UAF does not offer flight instruction.

A minor in aviation technology 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 Alaska environment.

Major — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete the following program (major) requirements:*
   a. AVTY F100—Private Pilot Ground School 4
      AVTY F102—Commercial Ground Instruction 3
      AVTY F155—Preventive Maintenance for Pilots (3)
      or AFPM advisor-approved course(s) (3) 3
      AVTY F200—Instrument Ground School 4
      AVTY F231—Arctic Survival 3
      AVTY F235—Elements of Weather 3
   b. Complete 15 credits of program approved major specialty electives* (see web page or contact department for suggested list of courses, many of which the applicant may obtain credit for based upon experience or ratings.)
4. Complete general electives 10
5. Minimum credits required 60

* *Students must earn a C grade (2.0) or better in each course.*

Minor

Aviation Technology

1. Complete the following foundation courses:
   AVTY F100—Private Pilot Ground School 4
2. Complete the following core courses:
   AVTY F155—Preventive Maintenance for Pilots 3
   AVTY F231—Arctic Survival 3
   AVTY F235—Elements of Weather 3
3. Complete 3 credits from the following electives:
   AVTY Elective (3)
   or AFPM advisor approved elective (3) 3
4. Minimum credits required 16

POWER GENERATION

College of Rural and Community Development
Community and Technical College
907-455-2906
www.ctc.uaf.edu/programs/pgen/

Certificate

Minimum Requirements for Certificate: 37 credits

The power generation program will help students develop entry-level skills needed in industrial and commercial electrical power generation and maintenance. Courses combine the technical know-how and hands-on experience necessary to develop entry level workers in a variety of power generation and industrial fields. Students will become familiar with the operation and maintenance of the standard equipment encountered in the power generation industry.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements (page 95).
3. Complete the following program (major) requirements:*
   PGEN F101—Intro to Power Generation, Distribution and Alternative Energy 3
   PGEN F102—Basic Electricity for Power Generation Operators 4
   PGEN F103—Introduction to Power Generation: Maintenance 4
   PGEN F104—Gas and Steam Turbines; Co-Generation and Combined Cycle Technologies 4
   PRT F110—Introduction to Occupational Safety, Health and Environmental Awareness 3
   PRT F120—Water Quality Management for Process Industries 4
   PRT F140—Industrial Process Instrumentation I 3
   WMT F103—Welding I 3
4. Minimum credits required 37

* *Students must earn a C grade (2.0) or better in each course.*

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www.alaska.edu/titleIXcompliance/nondiscrimination.

PROCESS TECHNOLOGY

College of Rural and Community Development
Community and Technical College
907-455-2906
www.ctc.uaf.edu/programs/protech/

A.A.S. Degree

Minimum Requirements for Degree: 63 credits

The process technology program prepares students for employment as operations technicians in the process industry, which includes oil and gas production, mining and milling, transportation and refining, chemical manufacturing, power generation, utilities, wastewater treatment facilities maintenance, and food processing.

This A.A.S. degree program incorporates technical and academic courses covering topics such as pumps and turbines, instrumentation, safety and quality control. Summer internships give students valuable practical experience and exposure to the true nature of process technology careers.

Major — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Demonstrate competence in computer technology skills (through the Process Technology program assessment) or complete one of the following:*
   DRT F110—Computer Literacy for Technicians (3)
   or CIOS F150—Computer Business Applications (3)
   or a program advisor-approved computer applications course (3) 3
4. Complete the following program major requirements*:
   PHYS F115X—Physical Science I (4)
   and CHEM F100X—Chemistry in Complex Systems (4)
   or 8 credits of program advisor-approved natural science courses 8
   PRT F101—Introduction to Process Technology 3
   PRT F110—Introduction to Occupational Safety, Health and Environmental Awareness 3
   PRT F130—Process Technology I: Equipment 4
   PRT F140—Industrial Process Instrumentation I 3
   PRT F144—Industrial Process Instrumentation II 3
   PRT F230—Process Technology II: Systems 4
   PRT F231—Process Technology III: Operations 4
   PRT F250—Process Technology Troubleshooting 3
   PRT F255—Process Technology Quality 1
   Major elective credits** 9
5. Minimum credits required: 63

* *Students must earn a C grade (2.0) or better in each course.*
** *Electives must be approved by the Process Technology Program advisor.*

RENEWABLE RESOURCES

College of Rural and Community Development
Rural and Economic Development Division
Fairbanks Campus 907-474-6528
Bristol Bay Campus 800-478-5109 or 907-842-5109
Chukchi Campus 907-442-3400
Interior-Aleutians Campus 907-474-5439
Kuskokwim Campus 907-543-4500
Northwest Campus 907-443-2201
www.uaf.edu/rural/

A.A.S. Degree

Minimum Requirements for Degree: 60 Credits

The renewable resources degree program is offered by the College of Rural and Community Development on the Fairbanks campus and through rural campuses. Students interested in the degree should first contact a faculty advisor at the Bristol Bay Campus (toll free number above) to discuss program content, requirements and expectations. This two-year A.A.S. degree program helps students gain employment with state, federal or tribal resource management agencies, Alaska Native Claims Settlement Act (ANCSA) corporations or other entities. For those already employed in this field, this program provides an opportunity to improve job skills.

Major — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements. (See page 97. As part of the A.A.S. degree requirements, complete MATH F103X or MATH F107X, CHEM F103X or CHEM F105X.)
3. Complete the following program (major) requirements:*
   a. Complete the following:
      ECON F235—Introduction to Natural Resource Economics 3
      NRM F101—Natural Resources Conservation and Policy 3
      NRM F204—Public Lands Law and Policy 3
      RD F255—Rural Alaska Land Issues 3
      RD F280—Resource Management Research Techniques 3
   b. Complete one course from each of the following groups:
      Group 1
      BIOL F104—Natural History of Alaska 3
      BIOL F104X—Natural History of Alaska 4
      BIOL F115X—Fundamentals of Biology I 4

      Group 2
      GEOG F111—Elements of Physical Geography 3
      GEOG F111X—Earth and Environment: Elements of Physical Geography 4
      GEOS F100X—Introduction to Earth Science 4
      NRM F380W—Soils and the Environment 3

      Group 3
      NRM F102—Practicum in Natural Resources Management ..... 1 – 2
      WLF F304—Wildlife Internships ..... 1 – 3
   c. Complete the following:
      CIOS F100—Introduction to Personal Computers (1)
      and CIOS F111—Computer Software for Beginners (2)
      or CIOS F150—Computer Business Applications (3) 3
      FISH F101—Introduction to Fisheries (3)
      and WLF F101—Survey of Wildlife Science (1)
      or ABUS F223—Real Estate Law (3)
      and RD F256—Co-Management of Renewable Resources (3)
      or BIOL F271—Principles of Ecology (4)
      and WLF F201—Wildlife Management Principles (3) .... 4 – 7

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d. Complete 9 – 14 credits from the following courses:
ANS F310—The Alaska Native Lands Settlement 3
ANTH F242—Native Cultures of Alaska.....3
BIOL F116X—Fundamentals of Biology II.....4
BIOL F150—Introduction to Marine Biology.....3
BIOL F239—Introduction to Plant Biology.....4
BIOL F271—Principles of Ecology.....4
CE F112—Elementary Surveying.....3
EMS F152—Emergency Trauma Training First Responder.....3
ENGL F314W,O/2—Technical Writing 3
FISH F101—Introduction to Fisheries.....3
MIN F101—Minerals, Man and the Environment 3
NRM F251—Silvics and Dendrology.....4
NRM F304O—Perspectives in Natural Resources Management 3
NRM F340—Natural Resources Measurement and Inventory 3
RD F265—Perspectives on Subsistence in Alaska.....3
RD F492—Rural Development Leadership Seminar 3
STAT F200X—Elementary Probability and Statistics 3
WLF F101—Survey of Wildlife Science 1
WLF F222—Wildlife Management Principles.....3
WLF F303W—Wildlife Management Techniques.....3
Or other advisor approved renewable resource related electives.....9 – 14

4. Minimum credits required.....60

* *Students must earn a C grade (2.0) or better in each course.*

Note: Prerequisites required for many courses.

RURAL HUMAN SERVICES

College of Rural and Community Development
Statewide Programs 907-474-5440
Chukchi Campus 907-442-3400
Interior-Aleutians Campus 907-474-5440
Kuskokwim Campus 907-543-4500
Northwest Campus 907-443-2201
www.uaf.edu/rhs/

Certificate

Minimum Requirements for Certificate: 32 Credits

The rural human services programs are designed to develop strong and healthy rural Alaska Native individuals, families and communities. They provide entry-level training for students preparing for careers as natural helpers/healers in village-based public, private and volunteer human service organizations. The curriculum draws extensively on resource people from the Native community and reflects a strong multicultural orientation that validates, incorporates and builds on Native values and principles.

The certificate program is a concentrated course of study focused on rural behavioral health services. Both the Alaska Division of Behavioral Health and the Alaska Native Tribal Health Consortium are currently developing and defining competencies and credentials for Alaska behavioral health care workers.

The certificate program provides additional credentials for service providers who work in related fields and would like additional training in rural behavioral health services. Providers who may want such training could include health aides, family service workers, correctional workers and teachers. Courses are presented as a series of four intensive three-week training sessions at selected delivery sites. A practicum and electives round out the program.

Admission is open to anyone employed by a regional Native health corporation or local entity providing village-based human services, or to individuals recognized by their communities as natural helpers/healers. A high school diploma or GED and/or previous training or work experience in the delivery of village-based human services are recommended but not required.

This degree program is delivered collaboratively within the UA system.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements. (See page 95. As part of the certificate requirements, complete RHS F110 and F115 for the human relations requirement. The communication and computation courses must be completed from the certificate requirements.)
3. Complete the following courses:
RHS F120—Family Systems I*.....2
RHS F130—Processes of Community Change.....2
RHS F140—Alaska Native Values and Principles.....1
RHS F150—Introduction to Rural Counseling*.....2
RHS F220—Family Systems II*.....2
RHS F250—Rural Counseling II*.....2
RHS F260—Addictions: Intervention and Treatment*.....2
RHS F265—Interpersonal Violence*.....2
RHS F275—Introduction to Mental Health Recovery.....2
RHS F285—Case Management*.....2
RHS F287—Rural Human Services Practicum.....4
RHS F290—Grief and Healing*.....2
4. Minimum credits required.....32

* *The Alcohol and Drug Abuse Certification review board has approved these courses toward certification or recertification of Substance Abuse Counselors in the state of Alaska.*

Note: Students spend time in intensive study at selected delivery sites.

SAFETY, HEALTH AND ENVIRONMENTAL AWARENESS TECHNOLOGY

College of Rural and Community Development
Community and Technical College
907-455-2906
www.ctc.uaf.edu/osh/

Certificate

Minimum Requirements for Certificate: 37 credits

This program develops entry-level skills in industrial safety, health and environmental awareness. Courses combine the technical know-how, use of state-of-the-art equipment and hands-on experience necessary for students to obtain work in a variety of safety-related industrial fields.

Students are taught the necessary objectives and skills required to take an entry-level Occupational Health and Safety Technologist exam when coupled with other requirements as set forth by the Council on Certification of Health, Environmental and Safety Technologists.

As the process industries expand and automate, the need for qualified safety technicians increases. The Community and Technical College and the Process Technology Program are active members of the American Society of Safety Engineers.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements (page 95).

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3. Complete the following program requirements:
   PRT F101—Introduction to Process Technology 3
   PRT F110—Introduction to Occupational Safety, Health and Environmental Awareness 3
   OSH F108—Injury Prevention and Risk Management.....4
   OSH F110—Program Assessment, Development, and Implementation 4
   OSH F120—Safety Program Management and Recordkeeping 3
   OSH F180—Introduction to Industrial Hygiene 4
   OSH F201—Workplace Injury and Incident Evaluations 4
   OSH F250—Hazardous Material Operation 3
4. Minimum credits required 37

TRIBAL MANAGEMENT

College of Rural and Community Development
Division of Rural and Economic Development
Interior-Aleutians Campus
907-474-5439
www.uaf.edu/iac/programs/tribal-management/

Certificate; A.A.S. Degree

Minimum Requirements for Certificate: 30 credits; for Degree: 60 credits

The tribal management program teaches the job-related skills and knowledge needed for entry-level management positions in tribal institutions, local government and other organizations in rural Alaska. Students perform specific tasks, learn basic management rationale and explore issues in tribal government. Each student has an individual educational plan, which is a critical means of tracking progress and a key part of the process of education in a rural-based learning environment. A student career portfolio demonstrates individual accomplishments and the achievement of specific goal-related skills and competencies. The student career portfolio is developed to meet program standards. A copy of the standards is available on request.

Students entering any tribal management course should be familiar with word processing, spreadsheets, databases and the Internet. Each student, with the help of a faculty advisor, is required to organize a personal support team to include a tribal leader or community mentor. Students entering either the A.A.S. degree or certificate program should meet with a faculty advisor to discuss program content, requirements and planning.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements (page 95).
3. Complete the following requirements:
   a. Complete 3 credits from one of the following computation courses:
      ABUS F155—Business Math (3)
      or approved computation course at the 100-level or above (3).....3
   b. Complete 3 credits from one of the following communication courses:
      ABUS F170—Business English (3)
      or approved communications course at the 100-level or above (3).....3
   c. Complete 3 credits from the following human relations courses:
      ABUS F154—Human Relations (3)
      or approved human relations course at the 100-level or above (3).....3
4. Complete the following program requirements.
   TM F101—Introduction to Tribal Management.....3
   TM F105—Introduction to Tribal Finance Applications.....3
   TM F199—Tribal Management Practicum I.....3
5. Complete 12 credits from any of the following categories:

Environmental and Natural Resources
BIOL F104—Natural History of Alaska.....3
FISH F101—Introduction to Fisheries.....3
NRM F101—Natural Resources Conservation and Policy 3
Advisor approved environmental technology elective.....3

Health and Social/Human Services
HLTH F105—Introduction to Health Careers.....2
HUMS F105—Personal Awareness and Growth.....3
HUMS F120—Cultural Diversity in Human Services 3
PSY F101—Introduction to Psychology 3

Education and Employment
ED F102—Orientation to Alaska Native Education.....2

Public Administration and Policy
ABUS F179—Fundamentals of Supervision 3
HIST F110—History of Alaska Natives 3

Tribal Business
ABUS F135—Recordkeeping for Business.....3
ABUS F151—Village Based Entrepreneurship.....1 – 3
ABUS F158—Introduction to Tourism .....1 – 3
BA F151—Introduction to Business 3

Economics
ECON F100X—Political Economy.....3
ECON F111—Economics of Rural Alaska 3

Tribal Planning
RD F250—Grant Writing for Community Development 3
Advisor-approved electives 6

6. Minimum credits required.....30

Major — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete the following program (major) requirements:*
   TM F101—Introduction to Tribal Management.....3
   TM F105—Introduction to Tribal Finance Applications.....3
   TM F199—Tribal Management Practicum I.....3
   TM F201—Advanced Tribal Management.....3
   TM F205—Advanced Tribal Finance Applications 3
   TM F299—Tribal Management Practicum II.....3
4. Complete 18 credits from any of the following categories:*

Environmental and Natural Resources
BIOL F104—Natural History of Alaska.....3
BIOL F271—Principles of Ecology.....4
FISH F101—Introduction to Fisheries.....3
NRM F101—Natural Resources Conservation and Policy 3
NRM F204—Public Lands Law and Policy 3
RD F255—Rural Alaska Land Issues.....3
WLF F222—Wildlife Management Principles.....3
Advisor-approved environmental technology elective.....3

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Health and Social/Human Services
HLTH F105—Introduction to Health Careers....2
HUMS F105—Personal Awareness and Growth....3
HUMS F120—Cultural Diversity in Human Services....3
PSY F101—Introduction to Psychology....3

Education and Employment
ED F102—Orientation to Alaska Native Education....2

Public Administration and Policy
ABUS F179—Fundamentals of Supervision....3
ABUS F231—Introduction to Personnel....3
ABUS F232—Contemporary Management Issues....3
AKNP F230—Federal Indian Law....3
HIST F110—History of Alaska Natives....3
RD F200—Community Development in the North....3
RD F250—Grant Writing for Community Development....1 – 3

Tribal Business
ABUS F135—Recordkeeping for Business....3
ABUS F151—Village Based Entrepreneurship....1 – 3
ABUS F158—Introduction to Tourism....1 – 3
ABUS F264—Filing/Records Management....3
BA F151—Introduction to Business....3

Economics
ECON F100X—Political Economy....3
ECON F111—Economics of Rural Alaska....3

Tribal Planning
RD F250—Grant Writing for Community Development....3
Advisor-approved electives....6

5. Complete credits in F100-level or higher in consultation with an academic advisor and community mentor....9
6. Minimum credits required....60

* *Students must earn a C grade (2.0) or better in each course.*

VETERINARY SCIENCE

College of Rural and Community Development
Interior-Aleutians Campus 907-474-5439
Chukchi Campus 907-442-3400
www.uaf.edu/drumbeats/veterinary-science/

Certificate

Minimum Requirements for Certificate: 37 – 38 credits

Training in veterinary science and medicine provides a strong base for careers in farming, dog mushing, wildlife management, public health, tribal resource management, environmental health, veterinary technology and for additional education leading to a career as a veterinarian. Information and training for work with domestic small animals, domestic farm animals, reindeer, bison and muskox are incorporated into the program. Certificate graduates are prepared to continue on in learning tracks for veterinary technology, public health, wildlife management, veterinary medical illustration, veterinary medicine and other science-related fields.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the following certificate requirements:
   ENGL F111X—Introduction to Academic Writing....3
   MATH F107X—Functions for Calculus** (4)
   or DEVM F105—Intermediate Algebra (3)....3 – 4
   ANTH/SOC F100X—Individuals, Society, and Culture (3)
   or ABUS F154—Human Relations (3)....3
3. Complete the following program (major) requirements:*
   CHEM F103X—Basic General Chemistry (4)
   or CHEM F105X—General Chemistry** (4)....4
   BIOL F103—Biology and Society (4)
   or BIOL F116X—Fundamentals of Biology II** (4)....4
   VTS F101—Introduction to Veterinary Science....2
   VTS F110—Veterinary Medical Terminology....3
   VTS F130—Animal Anatomy and Physiology for Veterinary Sciences....4
   VTS F140—Basic Animal Husbandry for Veterinary Sciences....3
   VTS F150—Basic Animal Nutrition and Feeding for Veterinary Sciences....3
   VTS F160—Animal Diseases for Veterinary Sciences....3
   VTS F199—Veterinary Science Practicum I....2
4. Minimum credits required....37 – 38

* *Students must earn a C grade (2.0) or better in each course.*
** *Students should take the higher level courses if additional degrees will be sought.*

WELDING AND MATERIALS TECHNOLOGY

College of Rural and Community Development
Community and Technical College
907-455-2800
www.ctc.uaf.edu/programs/weld/

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 small to offer hands-on training and maximum interaction between the student and instructor. Students may request credit by examination for any WMT class. Advanced students may work toward American Welding Society certification or pursue advanced projects. Contact the department for details.

The following courses are part of the welding and materials technology program:

WMT F101—Introduction to Welding....3
WMT F102—Intermediate Welding....3
WMT F103—Welding I....3
WMT F105—Welding II....3
WMT F106—Heat Treating/Metal Finishing/Knife Making I....3
WMT F117—Oxy-Acetylene Welding and Cutting....3
WMT F130—Shielded Metal Arc Welding (SMAW)....1 – 3
WMT F150—Gas Tungsten Arc Welding (GTAW)....1 – 3
WMT F160—Gas Metal Arc Weld Alum (GMAW)....1 – 3
WMT F170—Military Training Welding I....3
WMT F206—Heat Treating/Metal Finishing/Knife Making II....3
WMT F210—Uphill Pipe Welding....3
WMT F241—Gas Tungsten Arc and Gas Metal Arc Welding....3
WMT F270—Military Training Welding II....3
WMT F280—Military Training Welding III....3
WMT F290—Welding Proficiency Maintenance....3

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YUP'IK LANGUAGE PROFICIENCY

College of Liberal Arts
Department of Alaska Native Languages
907-474-7874
www.uaf.edu/anlc/classes/
Program available at Kuskokwim Campus only

Certificate; A.A.S. Degree

Minimum Requirements for Certificate: 30 credits; for Degree: 60 credits

The Yup'ik language proficiency program is designed to provide students with the opportunity to pursue structured study of Yup'ik in order to develop intermediate-level speaking and listening skills, as well as basic reading and writing abilities in the language. The certificate may serve as a step on the way to a two-year or four-year degree.

Certificate Program

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements. (See page 95. As part of the certificate requirements, the communication, computation and human relations content is embedded in some of the major required courses for this program.)
3. Complete the following:
   a. ESK F208—Yup'ik Composition.....3
      ESK F130—Beginning Yup'ik Grammar.....3
      ESK F240—Introduction to Reading Yup'ik.....3
   b. Complete one of the following sequences:
      ESK F121—Elementary Central Yup'ik Apprenticeship I 4
      ESK F122—Elementary Central Yup'ik Apprenticeship II 4
      ESK F123—Elementary Central Yup'ik Apprenticeship III.....4
      or
      ESK F103—Conversational Central Yup'ik 3
      ESK F104—Conversational Central Yup'ik 3
      ESK F203—Intermediate Central Yup'ik.....3
      ESK F204—Intermediate Central Yup'ik.....3
   c. Complete one of the following sequences:
      ESK F221—Intermediate Central Yup'ik Apprenticeship I 3
      ESK F222—Intermediate Central Yup'ik Apprenticeship II.....3
      ESK F223—Intermediate Central Yup'ik Apprenticeship III.....3
      or
      ESK F205—Regaining Fluency in Yup'ik 3
      ESK F206—Regaining Fluency in Yup'ik 3
      ESK F223—Intermediate Central Yup'ik Apprenticeship III.....3
4. Minimum credits required.....30

Major — A.A.S. Degree

1. Complete the general university requirements (page 93).
2. Complete the A.A.S. degree requirements (page 97).
3. Complete the following program (major) requirements:*
   a. Complete the following:
      ESK F208—Yup'ik Composition.....3
      ESK F130—Beginning Yup'ik Grammar.....3
      ESK F240—Introduction to Reading Yup'ik.....3
   b. Complete one of the following sequences:
      ESK F121—Elementary Central Yup'ik Apprenticeship I 4
      ESK F122—Elementary Central Yup'ik Apprenticeship II 4
      ESK F123—Elementary Central Yup'ik Apprenticeship III.....4
      or
      ESK F103—Conversational Central Yup'ik 3
      ESK F104—Conversational Central Yup'ik 3
      ESK F203—Intermediate Central Yup'ik.....3
      ESK F204—Intermediate Central Yup'ik.....3
   c. Complete one of the following sequences:
      ESK F221—Intermediate Central Yup'ik Apprenticeship I 3
      ESK F222—Intermediate Central Yup'ik Apprenticeship II.....3
      ESK F223—Intermediate Central Yup'ik Apprenticeship III.....3
      or
      ESK F205—Regaining Fluency in Yup'ik 3
      ESK F206—Regaining Fluency in Yup'ik 3
      ESK F223—Intermediate Central Yup'ik Apprenticeship III.....3
4. Minimum credits required.....60

* *Students must earn a C grade (2.0) or better in each course.*

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Bachelor's Degrees

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Graduate students Parker Bradley, left, and Aaron Dupuis, standing in boat, joined fisheries professor Andy Seitz, second from left, and undergraduate Mark Evans on a fisheries research project on the Yukon River near Eagle, Alaska.

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How to Earn a Bachelor's Degree

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 Bachelor's Degree Programs section; for bachelor's degree requirements in brief, see chart on pages 138 – 139.

If your degree program is delivered collaboratively within the UA system, credits you earn from each UA institution will be counted toward fulfillment of degree requirements and the minimum institutional residency requirements. You must contact Admissions to bring any credit from another UA system in. Credits will not transfer automatically. Institutional residency requirements are the minimum number of credits you must earn from the campus where you earn a degree.

General University Requirements

For a UAF bachelor's degree, you need at least 120 semester credits, including transfer credits. Of these, 39 credits must be upper-division (300-level or above) of which 24 must be UA residence credits and 15 must be UAF credits.

At least 30 semester credits applicable to any bachelor's degree must be earned at UAF. Transfer students need to earn at least 24 upper-division semester credits at UA of which 15 must be UAF credits. Transfer students must earn at least 12 semester credits in the major and at least 3 semester credits in the minor. 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 C grade (2.0) in courses required for your major requirements.

Unless otherwise specified by the appropriate academic unit, a course may be used more than once toward fulfilling degree, certificate, major and minor requirements. Credit hours for these courses count only once toward total credits required for the degree or certificate. Certifying that you have met all major and minor requirements is the responsibility of your department faculty, who notify the Office of Admissions and the Registrar.

If you want to use correspondence study credits from a school other than UAF to satisfy degree requirements, you must have approval for 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 F211X and F213X 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 F211X or F213X without first fulfilling the ENGL F111X requirement. (See Local Advanced Placement Credit — English.)

TABLE 19 **GENERAL UNIVERSITY REQUIREMENTS FOR BACCALAUREATE DEGREES**

Minimum number of credits	120 credits
Credits earned at UAF (residence credit)	30 credits
Upper-division credit (courses with numbers between F300 and F499)	39 credits total (some degrees require more); 24 of the 39 must be earned at UA and 15 at UAF
Additional UAF credit that must be earned by transfer students	12 credits in the major; 3 credits in the minor
Grade point average	2.0 cumulative and 2.0 in both the major and minor
Minimum grades for major	No grade lower than C (2.0) in courses required for major
Catalog year that can be used to determine requirements	May use any catalog in effect when enrolled as a degree-seeking student, regardless of major; seven-year limit on catalog year
Second degree	24 credits beyond the first bachelor's degree and all requirements for the second degree must be met

MAJORS

You may declare a major when you are admitted to UAF as a degree-seeking undergraduate student. If you haven't chosen a major you'll be enrolled as a general studies student. Non-degree students are not eligible to declare a major, be assigned class standing or receive financial aid.

Students enrolled in associate degree or certificate programs who want to declare a bachelor's degree major must apply for admission to a degree program following the standard admission process for bachelor's degree programs. The same is true for students enrolled in a bachelor's degree program who want to declare an associate degree or certificate program major (See admission requirements on page 25.)

- **Changing your Major**
  Undergraduate students may change majors by completing a change of major form available from the Office of Admissions and the Registrar or online at the registrar website. A change of major becomes effective after it is processed by the Office of Admissions and the Registrar. Graduating seniors must have change of majors submitted with their graduation application to be considered in that program.

CONCENTRATIONS

A concentration is an area of emphasis including the major core courses within a student's degree program. Some programs at UAF require a concentration, others do not. A student may only earn one degree in a specific discipline once. Using different concentrations within a degree program to count as different degrees is not allowed. Double concentrations may be permitted but must be petitioned through the standard undergraduate petition process.

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MINORS

A minor is a component of a bachelor's degree. The bachelor of arts, bachelor of arts and sciences and bachelor of emergency management degrees all require a minor. You must satisfactorily complete the requirements for a minor before a B.A., B.A.S., or B.E.M. degree can be awarded. A minor is optional for bachelor of science and bachelor of business administration degrees.

A minor from UAF consists of a minimum of 15 credits, at least 3 of which have to be earned at UAF. Students must earn a cumulative GPA of at least 2.00 (C) in the minor and follow minor requirements from the same academic catalog used for their bachelor's program. An associate of applied science degree or certificate of at least 30 credits earned at any regionally accredited college or university may be used to meet requirements for a minor in B.A. and B.A.S. degree programs.

Some minors require more than 15 credits and approval from the department. Refer to specific requirements listed in the Bachelor's Degree Program section. Students seeking minors can use DegreeWorks to review their options. Results in DegreeWorks will be more accurate after submitting a Declaration of Minor form to the Office of Admissions and the Registrar by the beginning of the senior year.

SECOND BACHELOR'S DEGREE

UAF graduates who want to earn a second bachelor's degree must complete at least 24 hours of credit beyond the first bachelor's degree. Students must meet all general university requirements, degree requirements and major requirements for both degrees.

Students who earned a bachelor's degree from another college or university, must be accepted for admission as a transfer student. All general university requirements (including residency requirement), degree and major requirements must be met. Students who graduated from a regionally accredited college or university, however, will be considered to have completed the equivalent of the UAF baccalaureate core.

DOUBLE DEGREES

Students who want to earn more than one UAF bachelor's degree must complete all general requirements as well as all major and minor requirements (if any) for all degrees. At least 24 semester credit hours beyond the total required for the first degree need to be earned before any additional degrees can be awarded. For two degrees completed at the same time, students may follow requirements from two different catalogs.

RESIDENCE CREDIT

Residence credit is course credit earned through any unit of UAF. Formal classroom instruction, correspondence study, distance-delivered courses, individual study or research at UAF are all considered residence credit. On the other hand, transfer credit, advanced placement credit, credit for prior learning, military service credit and credit granted through nationally prepared examinations are not considered resident credit, nor are credit by examination credits earned through locally prepared tests. None of these types of credit can be applied to UAF residency requirements. UAF residence credit takes precedence over any non-resident credits. For example, if a student has AP credit for a course, but takes the same courses at UAF, the AP credit will be excluded and the UAF course will be applied to the degree requirements.

RESIDENCY REQUIREMENT

Most universities have residency requirements that call for a certain number of credits toward a degree to be earned at the degree-granting school. At UAF, the residency requirement for bachelor's degrees is 30 resident credits.

DEGREE REQUIREMENTS AND TIME LIMITS

You may complete degree requirements in effect and published in the UAF catalog in any one of the previous seven academic years in which you are enrolled as a degree

TABLE 20 **DIFFERENCES BETWEEN DOUBLE MAJORS AND DOUBLE DEGREES**

	Double Majors	Double Degrees
Degree(s) earned	One bachelor's degree is earned. The bachelor of arts (B.A.) degree requires the completion of two majors rather than a major and a minor. Majors are selected from those approved for the B.A. degree. The bachelor of science (B.S.) degree requires the completion of a double major instead of a single major. Majors are selected from those approved for the B.S. degree.	More than one bachelor's degree is earned. Can be the same degree (e.g. two B.A.'s) or different degrees, (e.g., B.A. and B.S., B.B.A. and B.S., B.F.A. and B.A., etc.). Each degree is independent of the other. If requirements for one degree are not completed as scheduled, the other degree may be awarded if all requirements are met.
Graduation Application	A single graduation application and fee is required.	A separate graduation application and fee is required for each degree.
Catalog Year	A single catalog is followed for both majors to meet requirements.	Different catalogs may be followed to meet requirements for each degree.
General university requirements and major requirements	All general university requirements and all major requirements for both majors must be met.	All general university requirements as well as all major and minor requirements (if any) must be met for each degree.
Credit hours required	If one major is from a program that requires 120 total credits and the other major is from a program that requires 130 total credits, the 130 total credits must be completed.	At least 24 semester credit hours beyond the total required for the first degree must be completed before an additional degree can be awarded.

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student for a bachelor's degree. You're considered enrolled in your degree program when you complete the appropriate degree-seeking 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.

EXCEPTIONS TO DEGREE REQUIREMENTS

Occasionally an undergraduate student may request an exception to an academic requirement or regulation. Requests for an academic dispensation must be approved by petition. If you submit a petition on the basis of a disability, the coordinator of disability services will be consulted. Petition forms are available at the Office of Admissions and the Registrar or online at the registrar website. Forms need to be returned to the Office of Admissions and the Registrar with required signatures of approval. The Office of Admissions and the Registrar will notify you once the appropriate person or committee has made a decision about whether to approve your petition. Academic petitions fall into three categories and each involves different processes:

- **Core Curriculum Petitions**
  If your petition deals with baccalaureate core requirements, your advisor and the head of the department of the academic area involved must grant approval. Submit your signed petition to the Office of Admissions and the Registrar. It will then be forwarded to the chair of the faculty senate core curriculum review committee for consideration.
- **Major or Minor Degree Requirement Petitions**
  If you want to waive or substitute courses within your major or minor requirements, you need approval signatures from your advisor and the department or program head of your major or minor area. Submit your signed petition to the Office of Admissions and the Registrar.
- **Petitions for Other Requirements**
  If your petition deals with general university and/or specific requirements for your degree or other academic policies, you need approval from your advisor and the dean or director of the college or school in which your major is located. Submit your signed petition to the Office of Admissions and the Registrar. It will then be forwarded to the provost for consideration.

RESERVING COURSES FOR GRADUATE PROGRAMS

Seniors who have only a few remaining requirements for a bachelor's degree may take courses at the 400- or 600-level graduate course level and have them reserved for an advanced degree. Courses reserved for use toward a graduate program cannot also be counted toward requirements for your bachelor's degree. Unless otherwise notified in writing that the courses are to be used toward the undergraduate program, 600-level graduate courses will automatically be reserved for the advanced degree. To reserve one or more courses, you must be in your final year of an undergraduate program. Submit a written request to the Office of Admissions and the Registrar during the first four weeks of the semester. The request should identify which semester courses you want reserved for graduate study and not counted toward your bachelor's degree. (Reserving courses does not, however, assure that a graduate advisory committee will accept them as part of your eventual graduate program.)

GRADUATION

- **Responsibility**
  You are responsible for meeting all requirements for graduation. You are encouraged to use DegreeWorks throughout your college career to ensure you are on track to graduate.
- **Application for Graduation**
  You need to formally apply for graduation. An application for graduation and non-refundable fee must be filed with the Office of Admissions and the Registrar. We encourage students to apply the semester prior to the semester you plan to graduate. If you file your application by the published deadline, the graduation application fee is $50. If you miss that deadline, you can submit a late application for graduation by the published late graduation deadline for that semester. The fee for a late application is $80. Applications for graduation filed after the late deadline are processed for graduation the following semester. Students who apply for graduation and who do not complete degree requirements by the end of the semester must reapply for graduation and repay the fee.
- **Diplomas and Commencement**
  UAF issues diplomas to graduates three times a year: in September, January and June. Students who complete degree requirements for UA Board of Regents-approved academic programs during the academic year are invited to participate in the annual commencement ceremony at the end of spring semester.

  Names of students receiving degrees/certificates appear in the commencement program and are released to the media unless you submit a written request not to do so to the graduation department. Students who do not want their names released can indicate so on the application for graduation form. Graduates are responsible for ordering caps and gowns through the UAF bookstore in early spring.
- **Graduation with Honors**
  Graduation with honors is a tribute that recognizes academic achievement. Honors graduates have earned a cumulative GPA of 3.5 or higher in all college work. If a student's overall cumulative GPA is 3.5 or higher, a student graduates with the distinction of cum laude; 3.75 or higher, magna cum laude; 3.9 or higher and no grade lower than A-, summa cum laude. Your cumulative GPA for graduation with honors is based on all college work attempted at UAF, including any repeated or omitted credits due to Fresh Start.

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For transfer students to be considered for graduation with honors, they must have:

- 3.5 cumulative GPA in all attempted UAF credits, and
- UAF residence credit of 48 semester hours for a bachelor's degree.

Once those requirements are met, a cumulative GPA is calculated combining all college work attempted at UAF, as well as all college work attempted at any other institutions you've attended, including repeated credits and any credits that may not have been accepted for transfer to UAF. The combined cumulative GPA must also be 3.5 or higher for a transfer student to graduate with honors.

Types of Bachelor's Degrees

- **Bachelor of Arts**
  The B.A. degree emphasizes written and oral communication skills, creative thinking, critical analyses of texts, understanding cultures, and a working knowledge of social, political and historical contexts. The degree is typically pursued by students whose major areas of study are directed toward humanities, arts and social science disciplines.
- **Bachelor of Arts and Sciences**
  The B.A.S. degree encompasses the contexts of social sciences, mathematics, science, as well as culture and diversity. Students who want a foundation in these areas as well as a broad spectrum of knowledge pursue this degree.
- **Bachelor of Business Administration**
  The B.B.A. degree is the undergraduate equivalent of an M.B.A. Students explore a wide spectrum of business-related issues to develop advanced business, management and administration skills required in organizational settings at senior levels, and to accelerate high-level career development in the workplace.
- **Bachelor of Emergency Management**
  The B.E.M. degree offers a business administration curriculum tailored to meet the needs of a fire department business manager with a minor in Leadership and Civic Engagement.
- **Bachelor of Fine Arts**
  The B.F.A. degree has a rigorous curriculum designed to prepare talented students for professional careers in the arts.
- **Bachelor of Music**
  The B.M. degree encourages acquisition of skills and display of talent in music, with special emphasis on aesthetic performance and understanding.
- **Bachelor of Science**
  The B.S. degree emphasizes oral and written communication skills and analytical skills for examining and solving problems. The degree is typically pursued by students whose major areas of study are directed toward natural sciences, mathematics, statistics, engineering, computer science and some social science fields.
- **Bachelor of Technology**
  The B.T. interdisciplinary degree is designed for students with technical or vocational backgrounds who want to enhance their experiences with more advanced academic pursuits.

Bachelor's Degree Requirements

THE CORE CURRICULUM

For a summary of the bachelor's degree requirements see Table 21. Undergraduate bachelor's study at UAF 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 that, when combined with specialized study in the major and other specific degree requirements, prepares students to better meet the demands of life in the 21st century. Through the baccalaureate core experience, every UAF student is expected to achieve:

- multidimensional competency in written and oral English — including comprehension of complex materials and creation of 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 scientific method, frameworks that have nurtured scientific thought, 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 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 relationships between value systems and life choices.

If you completed your bachelor's degree from a regionally accredited institution, you will be considered to have completed the equivalent of the baccalaureate core when you have been officially accepted to an undergraduate degree program at UAF.

COURSE CLASSIFICATIONS FOR THE BACCALAUREATE CORE

Courses that may be used to satisfy general baccalaureate core requirements have course numbers ending with "X." For example, English F111X, Communication F141X and other "X" courses meet specific core requirements. See the requirements for the baccalaureate core for a listing of other specific core courses. Courses meeting the upper-division writing intensive and oral communication intensive

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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.

Two courses designated "O/2" are required to complete the oral communication intensive requirement.

Baccalaureate Core

Courses used to meet a science or mathematics core requirement may also be used to satisfy the major and/or minor degree requirements. Other core courses may not be used to meet any other requirements for a degree.

Requirements	Credits
Communication	**9**
ENGL F111X—Introduction to Academic Writing (3) *ENGL F190H may be substituted.*	
Complete one of the following: • ENGL F211X—Academic Writing about Literature (3) • ENGL F213X—Academic Writing about the Social and Natural Sciences (3)	
Complete one of the following: • COMM F131X—Fundamentals of Oral Communication: Group Context (3) • COMM F141X—Fundamentals of Oral Communication: Public Context (3)	
Perspectives on the Human Condition	**18**
Complete all of the following four courses: • ANTH F100X/SOC F100X—Individual, Society and Culture (3) • ECON F100X or PS F100X—Political Economy (3) • HIST F100X—Modern World History (3) • ENGL/FL F200X—World Literature (3)	12
Complete one of the following three courses: • ART/MUS/THR F200X—Aesthetic Appreciation: Interrelationship of Art, Drama and Music (3) • HUM F201X—Unity in the Arts (3) • ANS F202X—Aesthetic Appreciation of Alaskan Native Performance (3)	3
Complete one of the following six courses: • BA F323X—Business Ethics (3) • COMM F300X—Communicating Ethics (3) • JUST F300X—Ethics and Justice (3) • NRM F303X—Environmental Ethics and Actions (3) • PS F300X—Ethics and Society (3) • PHIL F322X—Ethics (3)	3
Or complete 12 credits from the above courses plus one of the following: • Two semester-length courses in a single Alaska Native language or other non-English language • Three semester-length courses (9 credits) in American Sign Language taken at the university level.	6 – 9
Mathematics	**3**
Complete one of the following: • MATH F103X—Concepts and Contemporary Applications of Mathematics (3) • MATH F107X—Functions for Calculus* (4) • MATH F161X—Algebra for Business and Economics** (3) • STAT F200X—Elementary Probability and Statistics (3) ** No credit may be earned for more than one of MATH F107X or F161X.*	
Or complete one of the following:* • MATH F200X—Calculus I** (4) • MATH F201X—Calculus II (4) • MATH F202X—Calculus III (4) • MATH F262X—Calculus for Business and Economics (4) • MATH F272X—Calculus for Life Sciences (4) **Or any math course having one of these as a prerequisite* ***No credit may be earned for more than one of Math F200X, F262X or F272.*	3 – 4
Natural Sciences	**8**
Complete any two (4-credit) courses. • ATM F101X—Weather and Climate of Alaska (4) • BIOL F100X—Human Biology (4) • BIOL F103X—Biology and Society (4) • BIOL F104X—Natural History (4) • BIOL F111X—Human Anatomy and Physiology I (4) • BIOL F112X—Human Anatomy and Physiology II (4) • BIOL F115X—Fundamentals of Biology I (4) • BIOL F116X—Fundamentals of Biology II (4) • CHEM F100X—Chemistry in Complex Systems (4) • CHEM F103X—Basic General Chemistry (4) • CHEM F104X—Beginnings in Biochemistry (4) • CHEM F105X—General Chemistry (4) • CHEM F106X—General Chemistry (4) • GEOG F111X—Earth and Environment: Elements of Physical Geography (4) • GEOS F100X—Introduction to Earth Science (4) • GEOS F101X—The Dynamic Earth (4) • GEOS F106X—Life and the Age of Dinosaurs (4) • GEOS F112X—History of Earth and Life (4) • GEOS F120X—Glaciers, Earthquakes and Volcanoes (4) • GEOS F125X—Humans, Earth and Environment (4) • MSL F111X—The Oceans (4) • PHYS F102X—Energy and Society (4) • PHYS F103X—College Physics (4) • PHYS F104X—College Physics (4) • PHYS F115X—Physical Science I (4) • PHYS F116X—Physical Science II (4) • PHYS F175X—Astronomy (4) • PHYS F211X—General Physics (4) • PHYS F212X—General Physics (4) • PHYS F213X—Elementary Modern Physics (4)	8
Library and Information Research	**0 – 1**
Successful completion of library skills competency test or LS F100X or LS F101X prior to junior standing	0 – 1
Upper-Division Writing and Oral Communication	
Complete the following at the upper-division level: Two writing intensive courses designated (W) and one oral communication intensive course designated (O), or two oral communication intensive courses designated (O/2) (see degree and/or major requirements)	
Total credits required	**38 – 39**

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Beyond the Core

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 • Any combination of courses at the F100-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 single non-English language taken at the university level and a minimum of 6 credits in social science.	18
Mathematics • One course at the F100-level or above in mathematical sciences (math, computer science, statistics)	3
Complete one of the following: • Minor complex* • Foreign/Alaska Native language/American Sign language option Two years study of one foreign or Alaska Native language or American Sign language at the university level (high school language credits or native language proficiency may allow students to begin at the intermediate or advanced level)	 at least 15 12 – 18
Major complex*	at least 30
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 that are not in the primary discipline of that major or minor may be used to fulfill the B.A. degree requirements in humanities, social sciences or mathematics. Courses used to fulfill minor degree requirements may be used at the same time to fill major or general distribution requirements if so designated.

** Departmental requirements for majors and minors may exceed the minimums indicated. Specific requirements are listed in the following section.*

** Students who hold a bachelors degree from a regionally accredited institution are not required to complete the minor complex.*

- **Minors**
  Minors are offered in many subject areas. Requirements for minors are listed in the following section. See the table on pages 4 – 5 for a list of all available degrees, including minors.

  An associate of applied science (A.A.S.) degree or certificate of at least 30 credits earned at any regionally accredited college or university may be used to meet requirements for a minor for the bachelor of arts (B.A.) degree. Students who hold a bachelors degree from a regionally accredited institution are not required to complete the minor complex.

- **Double Majors**
  If you're a bachelor of arts degree candidate, you may complete two majors rather than a major and a minor. Your majors must be selected from those approved for the bachelor of arts 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 or through the change of major procedure. You'll need to follow the degree requirements in a single catalog for both majors.

BACHELOR OF SCIENCE

Requirements	Credits
Complete the baccalaureate core	**38 – 39**
Complete the following B.S. requirements in addition to the core:	
Natural sciences • A one-year sequence in Core-designated natural science courses (see the Natural Sciences List on the previous page). The total natural science courses used to satisfy this requirement as well as the core requirement shall represent at least two different natural sciences.	8
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.	3
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 that are not in the primary discipline of that major or minor may be used to fulfill the B.S. degree requirements in mathematics or natural science. Courses used to fulfill minor degree requirements may be used at the same time to fill major or general distribution requirements if so designated.

* 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 following section.

- **Double Majors**
  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 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 the Office of Admissions and the Registrar 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 unless so designated. The catalog used for the minor must

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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 ARTS AND SCIENCES

See Arts and Sciences in the bachelor's degree programs section. A minor is required.

BACHELOR OF BUSINESS ADMINISTRATION

All majors must earn a C grade or better in all common body of knowledge courses, department-specific general requirements, major specific requirements, and specific math and statistics requirements.

Requirements	Credits
Complete the baccalaureate core	**38 – 39**
(BA F323X—Business Ethics must be included in the courses used to meet the Perspectives on the Human Condition requirement.)	
Complete the following B.B.A. requirements in addition to the core:	
Mathematics • MATH F161X—Algebra for Business and Economics (MATH F262X should be taken to complete the mathematics requirement for the core.)	3
Social Sciences and Statistics • STAT F200X—Elementary Probability and Statistics (3) • ECON 201—Principles of Economics I: Microeconomics (3) • ECON 202—Principles of Economics II: Macroeconomics (3) • ECON F227—Intermediate Statistics for Economics and Business (3)	10
Common Body of Knowledge • AIS F101—Effective Personal Computer Use OR demonstrated computer literacy (0 – 3) • ACCT F261–F262—Accounting Concepts and Uses (6) • AIS F310—Management of Information Systems or AIS F316—Accounting Information Systems (3) • BA F325—Financial Management (3) • BA F330—Legal Environment of Business (4) • BA F343—Principles of Marketing (3) • BA F360—Operations Management (3) • BA F390—Organization Theory and Behavior (3) • BA F462O—Corporate Strategy (3) • ECON F324—Intermediate Macroeconomics (3) or ECON F350—Money and Banking (3)	31 – 34
Major complex*	at least 27
Minor complex (optional) **	at least 15
Minimum credits required for degree	**120**

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.*

***Requirements for minors may exceed 15 credits. Specific requirements are listed in the following section.*

BACHELOR OF EMERGENCY MANAGEMENT

The B.E.M. degree offers a business administration curriculum tailored to meet the needs of a fire department business manager with a minor in Leadership and Civic Engagement. A minor is required.

BACHELOR OF FINE ARTS

B.F.A. general requirements are the same as the requirements for the B.A. degree except a minor is not required for the B.F.A.

BACHELOR OF MUSIC

See Music in the Bachelor's Degree Programs section.

BACHELOR OF TECHNOLOGY

The B.T. degree program offers qualified applicants the opportunity to expand upon their vocational or technical education. An A.A.S. degree from an accredited institution of higher education, or the equivalent, is one of the degree program requirements. See Technology in the Bachelor's Degree Programs section.

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TABLE 21 **SUMMARY OF BACHELOR'S DEGREE REQUIREMENTS**

	To be completed by all. See your degree requirements (e.g. B.B.A.) for any specific required core courses:	
Academic Discipline	**Baccalaureate Core**	**Bachelor of Arts and Bachelor of Fine Arts***
Communications	ENGL F111X—3 cr ENGL F211X or ENGL F213—3 cr COMM F131X or COMM F141X—3 cr	2 designated upper-division writing intensive (W) and either 1 designated upper-division oral intensive (O) course or 2 upper-division oral intensive courses designated O/2
Humanities and Social Sciences	Perspectives on the Human Condition (18 cr): ANTH/SOC F100X—3 cr ECON/PS F100X—3 cr HIST F100X—3 cr ART/MUS/THR F200X or ANS F202X or HUM F201X—3 cr ENGL/FL F200X—3 cr BA F323X or COMM F300X or JUST F300X or NRM F303X or PHIL F322X or PS F300X—3 cr or 12 credits from list at left plus 2 semester-length courses in a single Alaska Native or other non-English language or 3 semesters (9 credits) in American Sign Language taken at the university level	Humanities and Social Sciences (18 cr): Any combination of courses at the F100-level or above with a minimum of 6 credits in humanities and 6 credits in social sciences or up to 12 credits of a non-English language taken at the university level and at least 6 credits of social sciences
Mathematics	MATH F103X or MATH F107X or MATH F161X or STAT F200X or MATH F200X, F201X, F202X, F262X or F272X or any math course having one of the above as a prerequisite—3 or 4 cr	One 3-credit course at F100-level or above from math, computer sciences or statistics
Natural Sciences	Complete any two (4-credit) courses. ATM F101X—4 cr BIOL F100X—4 cr BIOL F103X—4 cr BIOL F104X—4 cr BIOL F111X —4 cr BIOL F112X—4 cr BIOL F115X—4 cr BIOL F116X—4 cr CHEM F100X—4 cr CHEM F103X—4 cr CHEM F104X—4 cr CHEM F105X—4 cr CHEM F106X—4 cr GEOG F111X—4 cr GEOS F100X—4 cr GEOS F101X—4 cr GEOS F106X—4 cr GEOS F112X—4 cr GEOS F120X—4 cr GEOS F125X—4 cr MSL F111X—4 cr PHYS F102X—4 cr PHYS F103X—4 cr PHYS F104X—4 cr PHYS F115X—4 cr PHYS F116X—4 cr PHYS F175X—4 cr PHYS F211X—4 cr PHYS F212X—4 cr PHYS F213X—4 cr	No additional natural science unless required by the major or minor
Library and Information Research	Successful completion of library skills competency test or LS F100X or F101X—0 – 1 cr (complete during first 2 years)	
Other		*B.F.A. general requirements are the same as the requirements for the B.A. degree except a minor is not required for the B.F.A.
Major Complex		At least 30 cr
Minor Complex		Required: at least 15 cr*
Total Required	38 – 40 cr	120 cr

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Complete the following degree requirements

Bachelor of Emergency Management	Bachelor of Science	Bachelor of Technology	Bachelor of Business Administration	Bachelor of Music	Bachelor of Arts and Sciences
2 designated upper-division writing intensive (W) and either 1 designated upper-division oral intensive (O) course or 2 upper-division oral intensive courses designated O/2	2 designated upper-division writing intensive (W) and either 1 designated upper-division oral intensive (O) course or 2 upper-division oral intensive courses designated O/2	ENGL F314 and 1 other designated upper-division writing intensive (W) and either 1 designated upper-division oral intensive (O) course or 2 upper-division oral intensive courses designated O/2	ENGL F314 and 1 other designated upper-division writing intensive (W) and either 1 designated upper-division oral intensive (O) course or 2 upper-division oral intensive courses designated O/2	2 designated upper-division writing intensive (W) and either 1 designated upper-division oral intensive (O) course or 2 upper-division oral intensive courses designated O/2	LAS F310 and LAS F420 or LAS F430 (COMM F131X should be taken to meet the Communications requirement.)
No additional humanities or social sciences unless required by major or minor	No additional humanities or social sciences unless required by major or minor	No additional humanities or social sciences unless required by major or minor	ECON F201—3 cr ECON F202—3 cr ECON F227—3 cr (BA F323X must be included in the courses used to meet the Perspectives on the Human Condition requirement.)	No additional humanities or social sciences except those required in the major	No additional humanities or social sciences except those required in the major. (ART/MUS/THR F200X, HIST F100X, ANTH/SOC F100X and ENGL/FL F200X must be included in the courses used to meet the Perspectives on the Human Condition requirements.)
STAT F200X—3 cr (MATH F107X or MATH F161X must be taken to meet the core math requirement)	One 3-credit course at the F100-level or above from math, computer sciences or statistics (a 3-credit calculus course must be included in core or B.S. requirements)	One 3-credit course at the F100-level or above from math, computer sciences or statistics (MATH F161X must be taken to meet the core math requirement)	STAT F200X—3 cr MATH F161X—3cr (MATH F262X must be taken to meet the core math requirement.)	One 3-credit course at the F100-level or above from math, computer sciences or statistics	MATH F205—3 cr MATH F206—3 cr (MATH F107X or MATH F161X must be taken to meet the core math requirement.)
No additional natural science required	One-year sequence in one natural science beyond the core-8 cr (Total natural science courses used to meet core and B.S. requirements must represent at least two different natural sciences.)	No additional natural science unless required by the major	No additional natural science required	No additional natural science required	2 additional core lab courses in the 2 disciplines not completed for the core natural sciences from the disciplines of biology, chemistry, physics and geoscience (2 different science discipline lab courses selected from the disciplines of biology, chemistry, physics and geoscience must be taken for the core natural science requirement.)
		Computer competency (any computer science or computer applications course)—3 cr TTCH F301 Technology and Society—3 cr Area of specialization—30+ cr Option—33 cr	Common Body of Knowledge—31 – 34 cr Free electives—9 – 13 cr		Electives—at least 7 cr
At least 40 cr	At least 30 cr		At least 30 cr	85 or more cr	At least 56 cr
At least 15 cr	Optional: at least 15 cr		Optional: at least 15 cr		At least 15 cr
129 – 131 cr	120 cr	120 cr	122 – 123 cr	120 cr	120 cr

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Bachelor's Degree Programs

ACCOUNTING

School of Management
Department of Accounting and Information Systems
907-474-7461
www.uaf.edu/som/programs/acct/

B.B.A. Degree

Minimum Requirements for Degree: 123 credits

The accounting department offers an extensive program for those interested in the fields of general accounting, auditing, managerial accounting, taxation and government accounting. 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.

The UAF accounting program is accredited by the Association to Advance Collegiate Schools of Business. The AACSB accredits 120 programs nationwide, and the UAF accounting program is the only program in Alaska with AACSB accreditation.

The accounting program prepares students for certification as Certified Public Accountants, Certified Management Accountants, Certified Financial Managers, Certified Internal Auditors and Certified Fraud Examiners. The UAF accounting program places nearly 100 percent of its graduates.

Major — B.B.A. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: BA F323X* and MATH F262X*.)
2. Complete the B.B.A. degree requirements. (See page 137. As part of the common body of knowledge, complete AIS F316.)
3. Complete ENGL F314W,O/2*.
4. Complete the following program (major) requirements:*
   ACCT F330—Income Tax 3
   ACCT F342—Managerial Cost Accounting 3
   ACCT F361—Intermediate Accounting 3
   ACCT F362—Intermediate Accounting 3
   ACCT F414—Governmental and Nonprofit Accounting 3
   ACCT F452W—Auditing 3
5. Complete two of the following:*
   ACCT F401—Advanced Accounting 3
   ACCT F404—Advanced Cost Accounting and Controllership 3
   ACCT F430—Advanced Taxes 3
   ACCT F472—Advanced Auditing 3
   AIS F473—Applied System Design 3
6. Complete free electives ..... 9 – 13
7. Minimum credits required 123

* *Students must earn a C grade (2.0) or better in each course.*

Note: The B.B.A. degree requires 50 percent of the accounting, business administration and economics credits to be earned in residence at UAF.

Note: Students within 18 credit hours of fulfilling the requirement for the bachelor's degree are eligible to take the CPA examination in Alaska. Students completing a bachelor's degree after Dec. 31, 2000 will be required to meet the state's 150-hour requirement to receive a CPA certificate.

Minor

1. Complete the following:*
   ACCT F261—Accounting Concepts and Uses I 3
   ACCT F262—Accounting Concepts and Uses II 3
   Upper-division accounting electives 9
2. Minimum credits required 15

* *Students must earn a C grade (2.0) (2.0) or better in each course.*

Note: Courses completed to satisfy this minor can be used to simultaneously satisfy other major or general distribution requirements.

ALASKA NATIVE LANGUAGES

College of Rural and Community Development
Department of Alaska Native Studies and Rural Development
907-474-7181
www.uaf.edu/anlc/classes/

Minor only

The Alaska Native language program offers courses in Eskimo, Aleut and Indian languages spoken in the state. Major and minor curricula are offered in Central Yup'ik Eskimo, the largest Alaska Native language in terms of number of speakers; and Inupiaq Eskimo, the second largest. Regular courses are also available in Gwich'in Athabascan. Individual or small-group instruction is available in other Athabascan languages as well as in Siberian Yup'ik, Alutiiq, Aleut and Tlingit. UAF is the only university in the United States to provide such programs. Students interested in individual or small group interaction should contact the Alaska Native Language Center.

Professional opportunities for those skilled in Alaska Native languages exist in teaching, research and cultural, educational and political development. The A.A.S. degree and the 30-credit certificate in Native language education for either Inupiaq or Athabascan are available by distance delivery. Both provide training in language and culture for people interested in becoming Native language instructors, and both may serve as a step toward further education.

The Alaska Native language teaching program benefits from the research staff and library of the Alaska Native Language Center. Students have access to researchers who are world leaders in documenting Eskimo and northern Athabascan languages. The library houses more than 15,000 items, virtually everything written about Alaska Native languages, including copies of documentation dating to the 1700s.

Minor

1. Complete the following:
   Any ANL or ESK courses 15
2. Minimum credits required 15

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ALASKA NATIVE STUDIES

College of Rural and Community Development
Department of Alaska Native Studies and Rural Development
907-474-7181
www.uaf.edu/danrd/

B.A. Degree

Minimum Requirements for Degree: 130 credits

Alaska Native Studies seeks to provide students with an awareness of the scope, richness and variety of Alaska Native cultures. It offers a series of critical perspectives on the contemporary Native experience in pluralistic North American society. The interdisciplinary academic program is built upon a combination of courses offered by the Alaska Native Studies program and other specialized disciplines.

The Alaska Native studies B.A. prepares students to appreciate historical and contemporary cultural dynamics. The department also welcomes students pursuing a second major or a minor. It encourages students who expect to be involved professionally in Alaska Native communities or other multicultural settings to pursue this degree.

Major — B.A. Degree

Concentrations: General, Language

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).
3. Complete the following program (major) requirements:*
   a. Complete the following:
      ANL F315—Alaska Native Languages: Eskimo-Aleut** (3)
      or ANL F316—Alaska Native Languages: Indian Languages** (3) 3
      ANS/PS F325—Native Self-Government 3
      ANS F347—Voices of Native American Peoples 3
      ANS F401—Cultural Knowledge of Native Elders 3
      ANS/ANTH F242—Native Cultures of Alaska 3
      HIST F110—History of Alaska Natives (3)
      or ANS F101—Introduction to Alaska Native Studies (3) 3
   b. Complete one of the following concentrations*:

General

1. Complete the following:
   ANS/ENGL F340—Contemporary Native American Literature (3)
   or ANS/ENGL F349—Narrative Art of Alaska Native Peoples (in English Translation) (3) 3
   ANS/PS F425—Federal Indian Law and Alaska Natives (3)
   or ANS/PS F450—Comparative Aboriginal Rights and Policies (3) 3
2. Complete 9 credits from the following (you may include courses not selected from courses above in general part 1):
   ANS F160—Alaska Native Dance 1
   ANS/THR F161—Introduction to Alaska Native Performance .3
   ANS F202X—Aesthetic Appreciation of Alaska Native Performance*** 3
   ANS F250—Current Alaska Native Leadership Perspectives 3
   ANS F251—Practicum in Native Cultural Expression 3
   ANS F300W—Alaska Native Writers Workshop 3
   ANS F310—The Alaska Native Lands Settlement 3
   ANS/RD F315—Tribal People and Development 3
   ANS F320W—Language and Culture: Application to Alaska ... 3
   ANS F335—Native North Americans 3
   ANS F348W—Native North American Women 3
   ANS F350W,O—Cross Cultural Communication: Alaskan Perspectives 3
   ANS F351—Practicum in Native Cultural Expression 3
   ANS F360—Advanced Native Dance 1
   ANS F361—Advanced Alaska Native Performance 3
   ANS/ART F365—Native Art of Alaska 3
   ANS F375—Native American Religion and Philosophy 3
   ANS/ED F420—Alaska Native Education 3
   ANS F475—Alaska Native Social Change 3
   PS F263—Alaska Native Politics 3
   RD F255—Rural Alaska Land Issues 3
   SOC F308—Race and Ethnic Relations 3
3. Minimum credits required 130

Language

1. Complete the following:
   ANL F251—Introduction to Athabascan Linguistics (3)
   or LING F101—Nature of Language (3) 3
   ANL F287—Teaching Methods for Alaska Native Languages ... 3
   ANL F288—Curriculum and Materials Development for Alaska Native Languages 3
   ANS/ANTH F320W—Language and Culture: Applications to Alaska 3
   LING F450O—Language Policy and Planning 3
2. Complete the following Language concentration requirement:
   Three years of 1 Alaska Native language or equivalent** 22
3. Minimum credits required 130

* *Students must earn a C grade (2.0) or better in each course.*
** *These courses may be used to fulfill the bachelor of arts requirements for a minor complex, or foreign/Alaska Native language option (page 136).*
*** *ANS F202X may not be counted toward an Alaska Native studies major if used to fulfill core requirements.*
Note: ANL F255 may be substituted for ANL F315.
Note: ANL F256 may be substituted for ANL F316.

Minor*

1. Complete the following:
   ANS F300- or F400-level course 3
   ANS F401—Cultural Knowledge of Native Elders 3
   Alaska Native Studies electives 9
2. Minimum credits required 15

* *All minor programs must be approved by the department head of Alaska Native Studies and Rural Development.*

AMERICAN SIGN LANGUAGE

College of Rural and Community Development
Community and Technical College
907-455-2823
www.ctc.uaf.edu

Minor only

The minor in American sign language provides students with an opportunity to acquire signing skills and experience American deaf culture and history. Students of ASLG will have a greater understanding of diversity and empathy for people with differing abilities. ASLG students will develop critical thinking skills and be able to sign clearly, be understood and comprehend native signers. ASLG minor students will be required to participate in community events and develop an ethical responsibility to the community in which they live.

Minor

1. Complete the following:*
   ASLG F101 – American Sign Language I 3
   ASLG F202 – American Sign Language II 3
   ASLG F203 – American Sign Language III 3
   ASLG F204 – American Sign Language IV 3

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ASLG F205 – American Sign Language V.....3
ASLG F110 – American Sign Language Practice** 1

2. Minimum credits required.....15

* *Students must earn a C grade (2.0) or better in each course.*
** *Can be repeated for up to 3 credits*

Note: Courses designated as humanities that are taken for the minor may also be used to fulfill humanities distribution requirements for the B.A. degree. Courses that are taken for the minor may not be used to fulfill the Core Perspectives on Human Condition requirements.

ANTHROPOLOGY

College of Liberal Arts
Department of Anthropology
907-474-7288
www.uaf.edu/anthro/

B.A., B.S. Degrees

Minimum Requirements for Degrees: B.A.: 120 credits; B.S.: 130 credits

The Department of Anthropology offers a balanced and flexible program of academic courses and research in cultural anthropology, linguistic anthropology, archaeology and biological anthropology. Anthropology contributes to an understanding of the complex problems of human behavior, biology, language, cultural and social organization, and the relationship of humans to their environments. Research carried out in the field, laboratory and library emphasizes past and present modes of living and the origins and distribution of peoples and cultures throughout the world. Although special attention is given to the circumpolar North, faculty also maintain active research programs elsewhere, such as Africa and North America.

Major — B.A. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements complete ANTH F100X*.)
2. Complete the B.A. degree requirements (page 136).
3. Complete the following program (major) requirements:*
   a. Complete the following:
      ANTH F211—Fundamentals of Archaeology (3)
      or ANTH F221—Introduction to Biological Anthropology (3) 3
      ANTH F215—Fundamentals of Social/Cultural Anthropology.....3
      ANTH F384—History of Anthropology 3
      ANTH F411O—Senior Seminar 3
      LING F101—Nature of Language 3
   b. Complete 6 anthropology electives, with degree classification designator 's' or 'h,' at least 4 (12 credits) of which are at the F400-level 18
4. Minimum credits required.....120

* *Students must earn a C grade (2.0) or better in each course.*

Note: LING F101 satisfies part of the B.A. humanities requirements.

Major — B.S. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements complete ANTH F100X*.)
2. Complete the B.S. degree requirements (page 136).
3. Complete the following program major requirements:*
   a. Complete the following:
      ANTH F211—Fundamentals of Archaeology.....3
      ANTH F221—Introduction to Biological Anthropology.....3
      ANTH F215—Fundamentals of Social/Cultural Anthropology (3)
      or ANTH F320W—Language and Culture: Applications to Alaska (3)
      or LING F101—Nature of Language (3) 3
      ANTH F411O—Senior Seminar 3
   b. Complete the following:
      ANTH F214—World Prehistory 3
      ANTH F405W—Archaeological Methods and Theory.....3
      ANTH F423—Paleoanthropology 3
      ANTH F424—Analytical Techniques 3
   c. Complete one of the following:
      ANTH F309—Circumpolar Archaeology 3
      ANTH F315—Human Biology.....3
   d. Complete one of the following:
      ANTH F415—Zooarchaeology and Taphonomy 3
      ANTH F422—Human Osteology 3
   e. Complete at least 2 of the following electives:**
      ANTH F426—Bioarchaeology 3
      ANTH F428—Ecological Anthropology.....3
      ANTH F492—Seminar: Physical Anthropology 3
      ANTH F492—Seminar: Archaeology.....3
4. Minimum credits required.....130

* *Students must earn a C grade (2.0) or better in each course.*
** *Courses not selected under "c" or "d" areas may be used to meet this area.*

Minor

1. Complete the following:
   ANTH F211—Fundamentals of Archaeology.....3
   ANTH F215—Fundamentals of Social/Cultural Anthropology 3
   ANTH F221—Introduction to Biological Anthropology.....3
   ANTH F320W—Language and Culture: Applications to Alaska 3
   Anthropology electives 6
2. Minimum credits required.....18

ARCTIC SKILLS

College of Rural and Community Development
Industrial and Service Technology Division
907-455-2895
www.uaf.edu/rural/

Minor only

The minor in arctic skills is designed for anyone who lives and works in a northern climate and wishes to learn to cope with the outdoor arctic environment.

Students who complete this minor also earn a state of Alaska EMTI certificate and may prepare to take the FAA written exam for partial fulfillment of the private pilot certificate requirements.

Minor

1. Complete the following:
   AVTY F100—Private Pilot Ground School (4)
   or AVTY F111—Fundamentals of Aviation (3) .....3 – 4
   AVTY F231—Arctic Survival (3)
   or EMS F257—Arctic Survival (3).....3
   EMS F170—EMT: Emergency Medical Technician I.....6
   Approved electives* .....3 – 4
2. Minimum credits required.....15

* *Approved by program manager.*

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ART

College of Liberal Arts
Department of Art
907-474-7530
www.uaf.edu/art/

B.A., B.F.A. Degrees

Minimum Requirements for Degrees: B.A.: 130 credits; B.F.A.: 130 credits

The art program encourages independent, original and creative thinking while recognizing the role and responsibility of the fine arts within the humanities.

The B.F.A. degree is professionally oriented and designed to prepare students for careers in art. It is the usual prerequisite for graduate studies in art. Admission requires a portfolio review by the art faculty, generally done in the student's junior year. Enrollment in the B.F.A. program is recommended only for students who are willing to make the considerable commitment of time and energy necessary to achieve professional competence in their major areas. Career opportunities for B.F.A. graduates include artist, designer, arts administrator, art teacher, gallery and museum administrator, and computer-related fields.

Major — B.A. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).
3. Complete the following program (major) requirements:*
   a. Complete the following:
      ART F105—Beginning Drawing 3
      ART F205—Intermediate Drawing 3
      ART F211—Beginning Sculpture 3
      ART F213—Beginning Painting (Acrylic or Oil) 3
      ART F261 and F262—History of World Art 6
   b. Complete two of the following:
      ART F161—Two-Dimensional Design 3
      ART F162—Color and Design 3
      ART F163—Three-Dimensional Design 3
   c. Complete one of the following electives:
      ART F201—Beginning Ceramics 3
      ART F207—Beginning Printmaking 3
      ART F209—Beginning Metalsmithing and Jewelry 3
      ART F268—Beginning Native Art Studio 3
      ART F371O—Digital Photography and Pixel Painting 3
   d. Complete three upper-division courses from one of these major concentrations:
      Ceramics 9
      Computer Art 9
      Drawing 9
      Metalsmithing 9
      Native Studio Art 9
      Painting 9
      Printmaking 9
      Sculpture 9
   e. Upper-division art history 3
4. Minimum art credits required for major 39
5. Minimum credits required 130

* *Students must earn a C grade (2.0) or better in each course.*

Note: Transfer students who are candidates for the B.A. degree or a B.F.A. in art must complete a minimum of 18 credits in art while in residence.

Major — B.F.A. Degree

Concentrations: Ceramics, Computer Art, Drawing, Metalsmithing, Native Studio Art, Painting, Printmaking, Sculpture

1. Complete the general university requirements (page 131).
2. Complete the B.F.A. degree requirements (page 137).
3. Complete the following program (major) requirements:*
   a. Complete the following:
      ART F105—Beginning Drawing 3
      ART F205—Intermediate Drawing 3
      ART F211—Beginning Sculpture 3
      ART F213—Beginning Painting (Acrylic or Oil) 3
      ART F261 and F262—History of World Art 6
   b. Complete two of the following:
      ART F161—Two-Dimensional Design 3
      ART F162—Color and Design 3
      ART F163—Three-Dimensional Design 3
   c. Complete one of the following: 3
      ART F201—Beginning Ceramics 3
      ART F207—Beginning Printmaking 3
      ART F209—Beginning Metalsmithing and Jewelry 3
      ART F268—Beginning Native Art Studio 3
      ART F371O—Digital Photography and Pixel Painting 3
   d. Complete the following:
      Upper-division art history** 9
      Major program approved by B.F.A. thesis committee*** 30
      Upper-division art electives 6
      Thesis project 3
4. Minimum credits required 130

* *Students must earn a C grade (2.0) or better in each course.*

** *Any upper-division art history class (ART F360, F363W, F364W, F365, F366, F367), ANTH/ART F402, ART F425W, F463, F490, F493, HUM F332 or HUM F469W may apply toward this requirement.*

*** *Major program must include at least two, and no more than three, studio areas. Minimum requirement for the first area is 15 upper-division credits. Minimum requirement for the second area is 9 upper-division credits.*

Note: A non-art minor is not required for this degree.

Note: Transfer students who are candidates for the B.A. degree or a B.F.A. in art must complete a minimum of 18 credits in art while in residence.

Note: All studio areas in the department are eligible for fulfillment of specialization requirements: ceramics, computer art, metalsmithing, Native art, painting, drawing, printmaking and sculpture.

Minor

1. Complete the following:*
   ART F105—Beginning Drawing 3
   ART F262—History of World Art 3
   ART F365—Native Art of Alaska 3
2. Complete one of the following:*
   ART F161—Two-Dimensional Design 3
   ART F162—Color and Design 3
   ART F163—Three-Dimensional Design 3
3. Complete one of the following:*
   ART F201—Beginning Ceramics 3
   ART F211—Beginning Sculpture 3
   ART F268—Beginning Native Art Studio 3
4. Complete one of the following:*
   ART F207—Beginning Printmaking 3
   ART F209—Beginning Metalsmithing and Jewelry 3
   ART F213—Beginning Painting (Acrylic or Oil) 3
   ART F371O—Digital Photography and Pixel Painting 3
5. Minimum credits required 18

* *Students must earn a C grade (2.0) or better in each course.*

Note: A minor in art for the B.A. or B.S. degree is available only to non-art majors.

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ARTS AND SCIENCES

School of Education
907-474-7341
www.uaf.edu/educ/

B.A.S. Degree

Minimum Requirements for Degree: 120 credits

The arts and sciences degree program instructs students in the subject areas encompassed in Alaska teacher content and performance standards: English/language arts, mathematics, science, geography, government and citizenship, history, skills for a healthy life, arts, world languages and technology.

The B.A.S. program is a broad-based major, concentrating on key principles and content knowledge in mathematics and science, the social sciences, humanities and fine arts.

Students in the B.A.S. degree program are advised by the School of Education. B.A.S. majors may choose any approved minor. Students who are interested in being teachers are encouraged to choose the education minor.

Major — B.A.S. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete the following: ART/MUS/THR F200X*, HIST F100X*, ANTH/SOC F100X*, ENG/FL F200X*, MATH F107X* or MATH F161X*, COMM F131X* or COMM F141X*, and two different science discipline laboratory courses selected from biology*, chemistry*, physics* and geoscience*. Two years of a non-English language highly recommended.)
2. Complete the following B.A.S. degree major requirements in addition to the core:*
   a. Complete the following mathematics requirements:
      MATH F205—Mathematics for Elementary School Teachers I 3
      MATH F206—Mathematics for Elementary School Teachers II 3
   b. Complete two additional laboratory courses in the two science disciplines not completed for the baccalaureate core.
   c. Complete the following social sciences requirements:
      GEOG F101—Expedition Earth: Introduction to Geography ... 3
      HIST F131—History of the U.S. (3)
      or HIST F132—History of the U.S. (3) 3
      HIST F461W—History of Alaska 3
      PS F101—Introduction to American Government and Politics 3
   d. Complete the following literature, grammar and writing requirements:
      ENGL F271—Introduction to Creative Writing — Fiction (3)
      or ENGL F272—Introduction to Creative Writing — Poetry (3)
      or ENGL F313W—Writing Non-Fiction Prose (3)
      or ENGL F314W,O/2—Technical Writing (3)
      or JRN F311W—Magazine Article Writing (3) 3
      ENGL F306—Survey of American Literature: Beginnings to the Civil War (3)
      or ENGL F307—Survey of American Literature: Civil War to the Present (3)
      or ENGL F308—Survey of British Literature: Beowulf to the Romantic Period (3)
      or another literature-focused course (3) 3
      ENGL F317—Traditional English Grammar 3
   e. Complete the following psychology and language development requirements:
      LING/ED F100 Language, Education and Linguistics (3)
      or LING F101—Nature of Language (3)
      or LING F303W,O—Language Acquisition (3) 3
      PSY F240—Lifespan Developmental Psychology (3)
      or PSY/ED F245— Child Development (3) 3
   f. Complete creative expression course or courses from applied courses in music, theatre, photography or art. 3
   g. Complete the following understanding diversity and culture requirements:
      ANTH F242—Native Cultures of Alaska 3
      Course selected from a list developed by the review committee 3
   h. Complete the following senior seminar requirements:
      LAS F410W,O/2—Scientific Research 3
      ED F486O/2—Media Literacy 3
      HIST F461 3
   i. Complete the following technology requirement:
      ED F237—Technology Tools for Teachers ..... 5 – 2
      This course is divided into four modules. Students have the option to test out of any of the four modules or enroll in and successfully complete for a passing grade any module that has not been successfully challenged.
   j. Complete the following Praxis test requirement:
      B.A.S. students will be required to have Alaska passing scores on the Praxis I and the Praxis II (test 0014) prior to completing their last semester. Praxis I assesses reading, writing and math; Praxis II "Elementary Content Knowledge" assesses broad knowledge and background in English/language, arts, math, science and social sciences.
3. Complete minor complex** 15
4. Complete electives ..... 0 – 8
5. Minimum credits required 120

* *Students must earn a C grade (2.0) or better in each course.*

** *Departmental requirements for minors may exceed this 15 credit minimum. See other program descriptions for specific minor requirements.*

Note: For the B.A.S. degree program, at least 39 credits must be taken in upper-division (F300- and F400-level) courses. Courses taken to fulfill the B.A.S. degree can also be counted for content minors or second majors.

ASIAN STUDIES

College of Liberal Arts
907-474-6507
www.uaf.edu/language/

Minor only

A minor in Asian studies provides interdisciplinary instruction in the varieties of Asian languages and cultures. It enables students to consolidate various course offerings into a meaningful and cohesive program relevant to several major fields of specialization. (Combining a Japanese Studies major with an Asian Studies minor requires approval from both programs.)

Minor

1. Complete 15 credits in approved Asian studies courses:*
   a. Department of Foreign Languages
      CHNS F101—Elementary Chinese I 5
      CHNS F102—Elementary Chinese II 5
      CHNS F201—Intermediate Chinese 4
      CHNS F202—Intermediate Chinese II 4
      JPN F101—Elementary Japanese I 5
      JPN F102—Elementary Japanese II 5

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JPN F201—Intermediate Japanese I 4
JPN F202—Intermediate Japanese II 4

b. Department of Geography
GEOG F311W—Geography of Asia 3

c. Department of History
HIST F121—East Asian Civilization 3
HIST F122—East Asian Civilization 3
HIST F330—Modern China 3
HIST F331—Modern Japan 3
HIST F333—Foundations of Japanese History.....3
HIST/WMS F414—Women and Gender in East Asian History.3

d. Department of Philosophy
PHIL F202—Introduction to Eastern Philosophy 3

e. Department of Political Science
PS F464W—East Asian Governments and Politics 3

2. Minimum credits required 15

* *Courses must be distributed among at least three departments and include material on at least two Asian countries. Students are strongly encouraged to include a semester or more of Asian language.*

BIOLOGICAL SCIENCES

College of Natural Science and Mathematics
Department of Biology and Wildlife
907-474-7671
www.bw.uaf.edu

B.A., B.S. Degrees

Minimum Requirements for Degrees: 130 credits

The biological sciences program provides a broad education and sound foundation in the basic principles of biology. Students who major in biological sciences may pursue either a B.A. or B.S. degree. The B.A. requires fewer credits in the major field than the B.S., but it gives greater emphasis in the social sciences and humanities and allows a greater breadth of subject matter.

The B.S. degree includes a foundation in the basic sciences and stronger requirements within the biological sciences than the B.A. Candidates who expect to teach in public secondary schools must be sure that they meet education requirements.

Major — B.A. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: CHEM F105X* and F106X*.)
2. Complete the B.A. degree requirements (page 136).
3. Complete the following program (major) requirements:*
BIOL F115X—Fundamentals of Biology I 4
BIOL F116X—Fundamentals of Biology II 4
BIOL F261—Introduction to Cell and Molecular Biology 4
BIOL F271—Principles of Ecology 4
BIOL F303—Principles of Metabolism and Biochemistry (4)
or CHEM F321—Organic Chemistry (3)
and CHEM F322—Organic Chemistry (3) .....4 – 6
BIOL F310—Animal Physiology (4)
or BIOL F111X and F112X—Human Anatomy and Physiology I & II (8)
or BIOL F334W—Structure and Function of Vascular Plants (4)
or BIOL F342—Microbiology (4) .....4 – 8
BIOL F362—Principles of Genetics 4
BIOL F481—Principles of Evolution 4
PHYS F103X—College Physics 4
STAT F200X—Elementary Probability and Statistics 3
4. Minimum credits required 130

Major — B.S. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: MATH F200X* or MATH F272X*; and CHEM F105X* and F106X*.)
2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete STAT F200X* or STAT F300*. Biology foundation courses may be used toward partial fulfillment of the natural science requirement.)
3. Complete the following program (major) requirements:*
a. Complete the following:
BIOL F115X—Fundamentals of Biology I 4
BIOL F116X—Fundamentals of Biology II 4
BIOL F261—Introduction to Cell and Molecular Biology 4
BIOL F271—Principles of Ecology 4
BIOL F303—Principles of Metabolism and Biochemistry (4)
or CHEM F321—Organic Chemistry (3)
and CHEM F322—Organic Chemistry (3) .....4 – 6
BIOL F310—Animal Physiology (4)
or BIOL F111X and F112X—Human Anatomy and Physiology I & II (8)
or BIOL F334W—Structure and Function in Vascular Plants (4)
or BIOL F342—Microbiology (4) .....4 – 8
BIOL F362—Principles of Genetics 4
BIOL F481—Principles of Evolution 4
PHYS F103X and PHYS F104X—College Physics (8)
or PHYS F211X and PHYS F212X—General Physics 8
b. Complete biology electives** 20
4. Minimum credits required 130

* *Students must earn a C grade (2.0) or better in each course.*
** *A maximum of 6 credits of independent study (course numbers ending in 97) may be applied to this requirement. Students may petition to substitute chemistry courses (up to 10 credits for the biology electives required for the B.S. degree.)*

Note: A foreign language is encouraged by the department in meeting requirements of the core curriculum.

Note: Biology foundation courses may be used toward partial fulfillment of the natural science requirement for the B.S. degree with a major in biological sciences.

Note: Candidates for the bachelor of science degree in general science wishing to 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.

Requirements for Biology Teachers (grades 7 – 12)*

1. Complete all the requirements of the biological sciences B.A. or B.S. degree.
2. Complete the following:
BIOL F310—Animal Physiology (4)
or BIOL F111X and BIOL F112X—Human Anatomy and Physiology (8) .....4 – 8
BIOL F239—Introduction to Plant Biology (4)
or BIOL F334—Structure and Function in Vascular Plants (4) 4
BIOL F342—Microbiology 4
3. Complete one of the following:
BIOL F305—Invertebrate Zoology (5)
or BIOL F406—Entomology (4)
or BIOL F425—Mammalogy (3)
or BIOL F426W,O/2—Ornithology (3)
or BIOL F427—Ichthyology (4) .....3 – 5
4. Complete the following:
PHIL F481—Philosophy of Science (3) 3

* *We strongly recommend that prospective secondary science teachers seek advising from the UAF School of Education early in your undergraduate degree program, so that you can be appropriately advised of the state of*

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Alaska requirements for teacher licensure. You will apply for admission to the UAF School of Education's post-baccalaureate teacher preparation program, a one-year intensive program, during your senior year. Above requirements apply to all candidates who apply to the UAF School of Education Spring 2006 or later, for licensure in biology.

Minor

1. Complete the following:
   BIOL F115X—Fundamentals of Biology I.....4
   BIOL F116X—Fundamentals of Biology II.....4
2. Complete three of the following:
   BIOL F310—Animal Physiology (4)
   or BIOL F111X and F112X—Human Anatomy and Physiology I and II (8).....4 – 8
   BIOL F271—Principles of Ecology.....4
   BIOL F303—Principles of Metabolism and Biochemistry.....4
   BIOL F334W—Structure and Function in Vascular Plants.....4
   BIOL F342—Microbiology.....4
   BIOL F362—Principles of Genetics.....4
   BIOL F481—Principles of Evolution.....4
3. Minimum credits required.....20

BUSINESS ADMINISTRATION

School of Management
Department of Business Administration
907-474-7461
www.uaf.edu/som/programs/ba/

B.B.A. Degree

Minimum Requirements for Degree: 120 credits

The business administration department offers professional education to students interested in management, finance, human resource management, international business, marketing and travel industry management.

Competent management practices require an education that is both broad and deep. The business administration program prepares graduates to meet complex technical, economic and social problems and enables them to apply imaginative and responsible leadership to the needs of industry and government.

The undergraduate and graduate programs are accredited by the Association to Advance Collegiate Schools of Business.

Major — B.B.A. Degree

Concentrations: Finance, General Business, Management and Organizations, Marketing

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: BA F323X*; and MATH F262X*.)
2. Complete the B.B.A. degree requirements. (See page 137. As part of the Common Body of Knowledge, complete AIS F310.)
3. Complete the following:*
   BA F151—Introduction to Business.....3
   ENGL F314W,O/2—Technical Writing.....3
4. Complete the following program (major) requirements:*
   BA F307—Introductory Human Resource Management.....3
   ECON F321—Intermediate Microeconomics (3)
   or ECON F322—Managerial Economics (3).....3
   BA F460—International Business.....3
5. Complete an additional 6 credits from ACCT, BA or ECON.
6. Complete one of the following concentrations:*
   a. **Finance**
      Complete four of the following:
      BA F423W—Investment Analysis.....3
      BA F424—Real Estate and Alternative Investments.....3
      BA F454O—Student Investment Fund.....3
      BA F455—Portfolio Management.....3
      BA F461—International Finance.....3
   b. **General Business**
      Complete four School of Management courses (of which at least three must be BA courses) approved by the undergraduate director and of which at least 6 hours must be upper division.
      Note: At least one course must be designated writing intensive (W).
   c. **Management and Organizations**
      Complete four of the following:
      BA F317W—Employment Law.....3
      BA F447W,O—Compensation Management.....3
      BA F456W—Small Business Management.....3
      BA F457—Training and Management Development.....3
      BA F467—Current Topics in Management.....3
   d. **Marketing**
      Complete four of the following:
      BA F241—Advertising, Sales and Promotion.....3
      BA F436—Consumer Behavior.....3
      BA F445W—Marketing Research.....3
      BA F490—Services Marketing.....3
      BA F491—Current Topics in Marketing.....3
7. Minimum credits required.....120

* *Students must earn a C grade (2.0) or better in each course.*

** *Business students may earn a minor as long as their business degree requirements are met first.*

Note: The B.B.A. degree requires 50 percent of the accounting, business administration and economics credits to be earned in residence at UAF.

Note: Only one bachelor of business administration degree may be earned with a concentration in general business, finance, management and organizations, or marketing.

Minor*

Finance

1. Complete the following:
   ACCT F261—Accounting Concepts and Uses I.....3
   BA F151—Introduction to Business.....3
   BA F325—Financial Management.....3
   ECON F200—Principles of Economics.....4
2. Complete one of the following with instructor permission:
   BA F423W—Investment Analysis.....3
   BA F424—Real Estate and Alternative Investments.....3
   BA F461—International Finance.....3
3. Minimum credits required.....16

General Business

1. Complete five School of Management courses (of which at least three must be B.A. courses) approved by the undergraduate director and of which at least 6 hours must be upper-division.
2. Minimum credits required.....15

Management and Organizations

1. Complete five of the following:
   BA F151—Introduction to Business.....3
   BA F307—Introductory Human Resource Management.....3
   BA F317W—Employment Law.....3
   BA F325—Financial Management.....3
   BA F330—The Legal Environment of Business.....4
   BA F343—Principles of Marketing.....3

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BA F360—Operations Management 3
BA F390—Organizational Theory and Behavior 3
ECON F200—Principles of Economics 4

2. Minimum credits required 15

Marketing

1. Complete five courses from the following:
   STAT F200X—Elementary Probability and Statistics 3
   BA F151—Introduction to Business 3
   BA F241—Advertising, Sales and Promotion 3
   BA F343—Principles of Marketing 3
   BA F436—Consumer Behavior 3
   BA F490—Services Marketing 3
   BA F491—Current Topics in Marketing 3
2. Minimum credits required 15

Sports Management

1. Required:
   BA F280—Sports Leadership 3
   BA F281—Sports Management 3
2. Complete nine credit hours from the following:
   ACCT F261—Accounting Concepts and Uses I 3
   AIS F310—Management of Information Systems 3
   BA F151—Introduction to Business 3
   BA F253—Internship in Business 3
   BA F307—Introductory Human Resource Management 3
   BA F390—Organizational Theory and Behavior 3
   BA F457—Training and Management Development 3
   PSY F337W—Sports Psychology 3
   JRN F260—Sports Journalism 3
3. Minimum credits required 15

* *Minors applicable to a bachelor of arts or bachelor of science degree.*

CHEMISTRY

College of Natural Science and Mathematics
Department of Chemistry and Biochemistry
907-474-5510
www.uaf.edu/chem/

B.A., B.S. Degrees

Minimum Requirements for Degrees: 130 credits

Graduates qualify for employment as teachers of chemistry; supervisors in industry; technical sales personnel; research chemists in federal, state, municipal, academic or industrial laboratories; in pre-medicine; and as laboratory technicians. Graduates also find positions in the environmental sciences, oceanography and related interdisciplinary fields. Many chemistry graduates elect to pursue advanced M.S., Ph.D., pharmacology or M.D. degrees.

The chemistry curriculum meets the American Chemical Society standards of introducing the basics of general, organic, inorganic, physical and analytical chemistry, and biochemistry. Undergraduate research leading to publications is strongly encouraged and many of the laboratory-based courses have a research component built into them. There are also options for an ACS-accredited degree which provides students additional exposure to environmental chemistry, biochemistry or forensic chemistry. Limited teaching assistantships are often available for upper division students, which strengthens leadership and communication skills.

The bachelors degree in environmental chemistry prepares students for public and private sector jobs in the field, or for graduate programs in environmental chemistry and related disciplines. The degree program is designed to provide students with core training in the chemical sciences, while providing exposure to a broad range of related disciplines. Students work with a faculty advisor to select required elective courses that best meet their interests and academic goals. Students are also required to enroll in research credits with a focus on an environmental chemistry topic. This provides an opportunity for students to gain first-hand experience working on advanced topics that are generally outside of the scope of an undergraduate curriculum. See the environmental chemistry graduate program or a description of the field of environmental chemistry. .

The chemistry and biochemistry department is housed in the Reichardt Building, which is equipped with research-grade instrumentation, including a high field nuclear magnetic resonance spectrometer, FT infrared spectrometers, atomic absorption spectrometer, UV-VIS diode array spectrometers, two gas chromatographs interfaced with mass spectrometers, a gas chromatograph with a flame ionization detector, high performance liquid chromatograph, capillary electrophoresis and a modern glove box for handling air-sensitive chemicals. Equipment for specialized X-ray diffractometry, electron microscopy, liquid scintillation counting, atomic force-field microscopy, dynamic light scattering analyses, etc. is available in cooperation with other UAF departments and institutes. Two computer laboratories equipped with modern chemical software and other software are available for all students enrolled in F200-level or above courses.

Major — B.A. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: MATH F200X; PHYS F103X and PHYS F104X, or PHYS F211X and PHYS F212X.)
2. Complete the B.A. degree requirements. (See page 136. As part of the B.A. degree requirements, complete: MATH F201X.)
3. Complete the following program (major) requirements:*
   CHEM F105X—General Chemistry I 4
   CHEM F106X—General Chemistry II 4
   CHEM F202—Basic Inorganic Chemistry 3
   CHEM F212—Chemical Equilibrium and Analysis 4
   CHEM F321—Organic Chemistry I 3
   CHEM F322—Organic Chemistry II 3
   CHEM F324W—Organic Laboratory 4
   CHEM F331—Physical Chemistry I 4
   CHEM F332—Physical Chemistry II 4
   CHEM F413W—Analytical Instrumental Laboratory 3
   CHEM F434W—Instrumental Methods in Physical Chemistry 3
   CHEM F481—Seminar 1
   CHEM F482O—Seminar 2
4. Complete the following:
   MATH F202X—Calculus 4
5. Minimum credits required 130

* *Students must earn a C grade (2.0) or better in each course.*

Major — B.S. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: MATH F200X; PHYS F103X and PHYS F104X, or PHYS F211X and PHYS F212X.)
2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree, complete: MATH F201X. Chemistry foundation courses may be used toward partial fulfillment of the natural science requirement.)
3. Complete the program (major) requirements as listed under Chemistry — B.A. Degree.

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4. Complete the following:*
   CHEM F402—Inorganic Chemistry** 3
   CHEM F450—General Biochemistry Macromolecules (3)
   or CHEM F451—General Biochemistry Metabolism 3
   CHEM F488—Undergraduate Chemistry and Biochemistry Research** 4

5. Minimum credits required 130

* *Students must earn a C grade (2.0) or better in each course.*

** *Advanced courses in the physical or biological sciences or mathematics may be substituted with permission of the head of the chemistry and biochemistry department. However, the student will not receive an ACS-certified degree.*

Note: Upon completing the recommended curriculum and fulfilling all general university requirements, the student will receive a bachelor's degree certified by the American Chemical Society.

Note: The electives must include at least 6 credits at the upper-division level (to satisfy the UAF general degree requirements for 39 upper-division.)

Concentrations: Biochemistry/Molecular Biology, Environmental Chemistry, Forensic Chemistry

Biochemistry/Molecular Biology

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: MATH F200X; PHYS F103X and PHYS F104X, or PHYS F211X and PHYS F212X.)

2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete: MATH F201X. Chemistry foundation courses may be used toward partial fulfillment of the natural science requirement.)

3. Complete the following program (major) requirements:*
   BIOL F115X—Fundamentals of Biology I 4
   BIOL F116X—Fundamentals of Biology II 4
   BIOL F342—Microbiology (4)
   or BIOL F362—Principles of Genetics (4)
   CHEM F105X—General Chemistry I 4
   CHEM F106X—General Chemistry II 4
   CHEM F212—Chemical Equilibrium and Analysis 4
   CHEM F321—Organic Chemistry I 3
   CHEM F322—Organic Chemistry II 3
   CHEM F324W—Organic Laboratory 4
   CHEM F331—Physical Chemistry I 4
   CHEM F332—Physical Chemistry II 4
   CHEM F413W—Analytical Instrumental Laboratory (3)
   or CHEM F434W—Instrumental Methods in Physical Chemistry (3) 3
   CHEM F450—General Biochemistry Macromolecules (3)
   or CHEM F451—General Biochemistry Metabolism 3
   CHEM F481—Seminar 1
   CHEM F482O—Seminar 2
   CHEM F488—Undergraduate Chemistry and Biochemistry Research (3) 3
   Major elective (approved by department head)** 6

4. Complete the following:
   MATH F202X—Calculus 4

5. Minimum credits required 130

* *Students must earn a C grade (2.0) or better in each course.*

** *CHEM F202, F402 required for ACS-accredited degree.*

Environmental Chemistry

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: MATH F200X; PHYS F103X and PHYS F104X, or PHYS F211X and PHYS F212X.)

2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree, complete: MATH F201X. Chemistry foundation courses may be used toward partial fulfillment of the natural science requirement.)

3. Complete the following:*
   CHEM F105X—General Chemistry I 4
   CHEM F106X—General Chemistry II 4
   CHEM F202—Basic Inorganic Chemistry 3
   CHEM F212—Chemical Equilibrium and Analysis 4
   CHEM F321—Organic Chemistry I 3
   CHEM F322—Organic Chemistry II 3
   CHEM F324W—Organic Laboratory 4
   CHEM F331—Physical Chemistry I 4
   CHEM F332—Physical Chemistry II 4
   CHEM F413W—Analytical Instrumental Laboratory 3
   CHEM F434W—Instrumental Methods in Physical Chemistry 3
   CHEM F450—General Biochemistry Macromolecules (3)
   or CHEM F451—General Biochemistry Metabolism 3
   CHEM F481—Seminar 1
   CHEM F482O—Seminar 2
   CHEM F488—Undergraduate Chemistry and Biochemistry Research** 2

4. Complete the following:
   MATH F202X—Calculus III 4
   STAT F300—Statistics 3

5. Complete two of the following courses:*
   BIOL F115X—Fundamentals of Biology I 4
   BIOL F116X—Fundamentals of Biology II 4
   GEOS F101X—The Dynamic Earth 4
   GEOS F125X—Humans, Earth, and the Environment 4
   ATM F101X—Weather and Climate of Alaska 4

6. Complete one of the following advanced courses:*
   BIOL F271—Principles of Ecology 4
   BIOL F342—Microbiology 4
   BIOL F443W—Microbial Ecology 3
   BIOL F483—Stream Ecology 3
   ENVE F458—Energy and the Environment 3
   NRM F380W—Soils and the Environment 3
   ATM F401—Introduction to Atmospheric Science 3
   CHEM F402—Advanced Inorganic Chemistry 3

7. Complete one of the following advanced courses:*
   CHEM F406—Atmospheric Chemistry 3
   CE F341—Environmental Engineering 4
   GEOS F417—Introduction to Geochemistry 3

8. Minimum credits required 130

* *Students must earn a C grade (2.0) or better in each course.*

** *Research topic should study environmental chemistry.*

Forensic Chemistry

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: MATH F200X; PHYS F103X and PHYS F104X, or PHYS F211X and PHYS F212X.)

2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree, complete: MATH F201X. Chemistry foundation courses may be used toward partial fulfillment of the natural science requirement.)

3. Complete the program (major) requirements as listed under Chemistry — B.A. degree.

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4. Complete the following chemistry requirements:*
   CHEM F402—Inorganic Chemistry 3
   CHEM F450—General Biochemistry Macromolecules (3)
   or CHEM F451—General Biochemistry Metabolism 3
   CHEM F488—Undergraduate Chemistry and Biochemistry Research 2
5. Complete the following justice requirements:*
   JUST F110—Introduction to Justice 3
   JUST F222—Research Methods 3
   JUST F251—Criminology 3
   JUST F300X—Ethics and Justice** 3
   JUST F354—Procedural Law 3
   JUST F454W—Advanced Problems in Procedural Law 3
6. Minimum credits required 130

* *Students must earn a C grade (2.0) or better in each course.*
** *JUST F300X may not be used to fulfill core ethics requirement.*

Requirements for Chemistry Teachers (grades 7 – 12)

1. Complete all the requirements of the chemistry B.A. or B.S. degree you wish to seek.
2. All prospective chemistry teachers must complete the following:
   CHEM F450—General Biochemistry Macromolecules (3)
   or CHEM F451—General Biochemistry Metabolism 3
   CHEM F488—Undergraduate Chemistry and Biochemistry Research 4
3. All prospective science teachers must complete the following:
   PHIL F481—Philosophy of Science 3

Note: We strongly recommend that prospective secondary science teachers seek advising from the UAF School of Education early in your undergraduate degree program so that you can be appropriately advised of the state of Alaska requirements for teacher licensure. You will apply for admission to the UAF School of Education's post-baccalaureate teacher preparation program, a one-year intensive program, during your senior year. Above requirements apply to all candidates who apply to the UAF School of Education Spring 2006 or later for licensure in chemistry.

Minor

Chemistry

1. Complete the following:
   CHEM F105X—General Chemistry I 4
   CHEM F106X—General Chemistry II 4
2. Complete the following approved electives:
   CHEM F212—Chemical Equilibrium and Analysis* 4
   CHEM F321—Organic Chemistry I 3
   CHEM F322—Organic Chemistry II 3
   CHEM F331—Physical Chemistry I 4
   CHEM F332—Physical Chemistry II 4
3. Complete one of the following additional chemistry lab courses:
   CHEM F202—Basic Inorganic Chemistry 3
   CHEM F324W—Organic Chemistry Lab 4
4. Minimum credits required ..... 29 – 30

Biochemistry

1. Complete the following foundation courses:
   CHEM F105X—General Chemistry I 4
   CHEM F106X—General Chemistry II 4
2. Complete the following:
   CHEM F321—Organic Chemistry I 3
   CHEM F322—Organic Chemistry II 3
   CHEM F331—Physical Chemistry I 4
   CHEM F451—General Biochemistry — Metabolism 3
3. Complete two of the following chemistry lab courses:
   CHEM F202—Basic Inorganic Chemistry 3
   CHEM F212—Chemical Equilibrium and Analysis 4
   CHEM F324—Organic Chemistry Lab 4
4. Minimum credits required ..... 28 – 29

CHILD DEVELOPMENT AND FAMILY STUDIES

College of Rural and Community Development
Bristol Bay Campus 907-842-5109
Chukchi Campus 907-442-3400
Interior-Aleutians Campus 907-474-5439
Kuskokwim Campus 907-543-4500
Northwest Campus 907-443-2201
Community and Technical College 907-455-2038
www.uaf.edu/rural/

B.A. Degree

Minimum Requirements for Degree: 129 credits

This program provides the necessary preparation for early childhood educators who wish to advance their professional knowledge and career opportunities with specialized study in curriculum, administration or family support. A strong desire to work in an early care and education setting with children and their families is important.

Students who have completed an A.A.S. in early childhood education will have completed the first part of the B.A. program, although completion of the A.A.S. degree is not a requirement for entry to this program. Students majoring in this program must work closely with their advisors and be willing to work collaboratively within their concentration to fulfill the practicum components of the course of study.

This program is available through flexible course delivery methods to early childhood educators living in both rural and urban Alaska. Graduates are highly competitive candidates for positions of greater responsibility and compensation in the early care and education profession in Alaska.

Major — B.A. Degree

Concentrations: Administration, Curriculum and Teaching, Family Support

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, BIOL F104X and GEOS F120X or GEOG F111X are recommended. LING F303W, O is recommended to fulfill one of the writing and oral intensive course requirements.)
2. Complete the B.A. degree requirements. (See page 136. As part of the B.A. social science degree requirements, complete PSY F101. Complete ECE F245 or ECE F107. The following courses are also recommended for the humanities/social science requirements: ECE F350, SOC F350W, ASLG F101 and ANS F330. Remaining course requirements should be chosen in consultation with your advisor.)
3. Complete the following program (major) requirements:*
   ECE F101—Overview of the Profession 3
   ECE F118—Nutrition, Health and Safety (3)
   or ECE F111—Nutrition (1)
   and ECE F112—Healthy Learning Environments for Young Children (1)
   and ECE F113—Safe Environments for Young Children (1) 3
   ECE F210—Child Guidance 3

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ECE F220—Infant and Toddler Care (3)
or ECE F104—Child Development I: Prenatal Infants and Toddlers (3) 3
ECE F235—Screening, Assessment and Recording....2
ECE F240—Inclusion of Children with Special Needs....3
ECE F270—Practicum II....3
ECE F3420—Family Relationships....3
ECE F445W—Adolescence through the Lifespan....3
ECE F470—Advanced Practicum....3

4. Complete one of the following specialized areas:*

Administration

Complete the following 21 credits:
ECE F340—Financial Management....3
ECE F341—Personnel Management....3
CIOS F150—Computer Business Applications....3
ENGL F212—Business, Grant and Report Writing....3
BA S301—Principles of Management (UAS) (3)
or ABUS F301W—Leadership....3
BA S343—Principles of Marketing (UAS)....3
BA S490—Political and Social Environment of Business (UAS)....3

Note: This specialization is offered in collaboration with the University of Alaska Southeast. For course descriptions of UAS courses see current University of Alaska Southeast catalog. These courses are available by distance delivery.

Curriculum and Teaching

Complete the following 21 credits:
ECE F140—Social Development....3
ECE F120A—Curriculum I (3)
or ECE F127—Language and Creative Expression....3
ECE F310—Constructivist Curriculum....3
ECE F360—Assessment in Early Childhood....3
ECE F420W—Developing Literacy in the Early Years....3
ECE F430—Fine Arts in the Early Years....3
ECE F440—Exploring Math and Science in the Early Years....3

Family Support

Complete the following 21 credits:
ECE F132—Young Child and the Family....1
HUMS F265—Substance Abuse and the Family....2
ECE F242—Child and Family Ecology....3
or SOC F242—The Family: A Cross Cultural Perspective....3
SWK F350W—Women's Issues in Social Welfare and Social Work Practice....3
SWK F360—Child Abuse and Neglect....3
ANTH F407—Kinship and Social Organization....3
or RD F401—Cultural Knowledge of Native Elders....3
or RD F460—Women and Development....3
ECE F442—Family Resource Management....3

5. Minimum credits required....129

* *Students must earn a C grade (2.0) or better in each course.*

CIVIL ENGINEERING

College of Engineering and Mines
Department of Civil and Environmental Engineering
907-474-7241
www.uaf.edu/cem/cee/

B.S. Degree

Minimum Requirements for Degree: 134 credits

Civil engineers plan, design and supervise the construction of public and private structures such as space launching facilities, offshore structures, bridges, buildings, tunnels, highways, transit systems, dams, airports, irrigation projects, and water treatment and distribution facilities.

Civil engineers use sophisticated technology and employ computer-aided engineering during design, construction, project scheduling and cost control project phases. They are creative problem solvers involved in community development and the challenges of pollution, deteriorating infrastructure, traffic congestion, energy needs, floods, earthquakes and urban planning.

The civil engineering program at UAF began in 1922 and graduated its first major in 1931. Many of the more than 800 men and women who have graduated since then work in a wide range of positions all over Alaska. More than 60 percent of Alaska's professional engineers practice in civil engineering. The program at UAF has been accredited since 1940 and is currently accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. All engineering programs in the department give special attention to problems of northern regions.

The civil engineering program educational objectives are:

1. Graduates will have a strong fundamental scientific and technical knowledge base as well as strong critical thinking skills.
2. Graduates will apply their engineering skills to critically analyze and interpret data and be proficient in engineering design accommodating the total project environment.
3. Graduates will be able to communicate with the technical, professional and broader communities in written, verbal and visual formats, including interacting in interdisciplinary contexts.
4. Graduates will demonstrate high standards in ethical, legal and professional obligations to protect human health, welfare and the environment.
5. Graduates will be active in the professional civil engineering community, actively contribute to the profession and pursue lifelong learning.

Graduate students may enter one of two programs: the master of civil engineering is for students whose goal is broad professional practice, and the master of science degree is for those who favor an emphasis on research and specialized study.

In addition to general civil engineering courses, the department offers specialties in transportation, geotechnical, structures, water resources, hydrology and environmental studies. These courses emphasize principles of analysis, planning and engineering design in northern regions.

A master's degree program can include courses in environmental engineering, engineering management and other areas. An advanced degree in environmental engineering administered within the civil engineering department is available.

For more information about the civil engineering program mission, goals and educational objectives, visit www.uaf.edu/cem/cee/about/.

Major — B.S. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: MATH F200X*, CHEM F105X* and CHEM F106X*.)
2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete: MATH F201X*; PHYS F211X* and PHYS F212X*.)
3. Complete the following program (major) requirements:*
CE F112—Elementary Surveying....3
CE F302—Introduction to Transportation Engineering....3
CE F326W—Introduction to Geotechnical Engineering....4

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CE F331—Structural Analysis....3
CE F334—Properties of Materials....3
CE F344—Water Resources Engineering....3
CE F400—FE Exam....0
CE F432—Steel Design....3
CE F438W,O—Design of Engineered Systems....3
CE F441—Environmental Engineering....4
CE F490—Civil Engineering Seminar....0.5
CE F491—Civil Engineering Seminar....0.5
DRT F170—Beginning AutoCAD....3
ES F101—Introduction to Engineering....3
ES F201—Computer Techniques....3
ES F209—Statics....3
ES F210—Dynamics....3
ES F301—Engineering Analysis....3
ES F331—Mechanics of Materials....3
ES F341—Fluid Mechanics....4
ESM F422—Engineering Decisions....3
ESM F450W—Economic Analysis and Operations....3
GE F261—General Geology for Engineers....3
MATH F202X—Calculus III....4
MATH F302—Differential Equations....3
Technical electives**....12

4. Minimum credits required....134

* *Students must earn a C grade (2.0) or better in each course.*

** *Technical electives must include 3 credits in the field of environmental engineering or transportation, 6 credits of CE, ENVE, ESM courses or approved technical courses, and 3 credits of either ES F307 or ES F346. Students must earn a C grade (2.0) or better in each technical elective course. Up to two graduate-level courses may be used towards graduation. Graduate-level courses must be approved by student's advisor and the student must be within two semesters of graduation and have at least a 3.0 GPA to take graduate-level courses.*

Note: The ability to use computers for normal class work is expected in all engineering classes above the F100-level.

COMMUNICATION

College of Liberal Arts
Department of Communication
907-474-6591
www.uaf.edu/comm/

B.A. Degree

Minimum Requirements for Degree: 120 credits

The communication program teaches students to communicate effectively and ethically in a rapidly changing world characterized by diversity in gender, culture and belief. It offers a comprehensive background in the discipline in preparation for employment or further education. Students majoring in other disciplines find communication electives valuable additions to their programs.

The program is both theoretical and pragmatic, designed to prepare students for the professional workplace or for advanced study.

Major — B.A. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).
3. Complete the following program (major) requirements:*
   a. Complete the following:
      COMM F180—Introduction to Human Communication....3
      COMM F330—Intercultural Communication....3
      COMM F351—Gender and Communication....3
      COMM F401—Communication Research Methods....3
      COMM F425W—Communication Theory....3
      COMM F482W,O—Capstone Seminar in Communication....3
   b. Complete four of the following:**
      COMM F300X—Communicating Ethics***....3
      COMM F320—Communication and Language....3
      COMM F321W—Nonverbal Communication....3
      COMM F322W—Communication in Interpersonal Relationships....3
      COMM F331O—Advanced Group Communication....3
      COMM F335O—Organizational Communication....3
      COMM F352—Family Communication....3
      COMM F353—Conflict, Mediation, and Communication....3
      COMM F380—Communication and Diversity....3
      COMM F432O—Professional Public Speaking....3
      COMM F441—Persuasion....3
      COMM F462W—Communication in Health Contexts....3
      COMM F475W—Applied Communication in Training and Development....3
4. Minimum credits required....120

* *Students must earn a C grade (2.0) or better in each course.*

** *With approval of advisor, an appropriate level special topics or independent studies course in communication may be used to meet this requirement.*

*** *If taken to meet the upper-division of baccalaureate core requirement for Ethics/Values and Choices in the Perspectives in the Human Condition, then the student must take an additional F300- or F400-level communication course to complete the major.*

Minor

1. Complete the following:
   COMM F180—Introduction to Human Communication....3
   COMM F330—Intercultural Communication (3)
   or COMM F351—Gender and Communication....3
2. Complete communication electives at the F300-level or above....9
3. Minimum credits required....15

Note: Courses designated as social science or humanities that are taken for the minor may also be used to fulfill social science and/or humanities distribution requirements for the B.A. degree.

COMPUTER ENGINEERING

College of Engineering and Mines
Department of Electrical and Computer Engineering
907-474-7137
www.uaf.edu/cem/ece/

B.S. Degree

Minimum Requirements for Degree: 133 credits

The mission of the UAF Electrical and Computer Engineering Department is to offer the highest quality, contemporary education in electrical and computer engineering at the undergraduate and graduate levels and to perform research appropriate to the technical needs of the state of Alaska, the nation and the world.

Computer engineering is a relatively new discipline. It lies somewhere in the middle between computer science, which covers theory, algorithms, software, networking, graphics and computer architecture — and electrical engineering, which covers microelectronics, electrical circuits and devices, networks, communications systems, computer architecture, hardware design and systems analysis. Computer engineers design, analyze, produce, operate, program and maintain computer and digital systems. They apply theories and principles of science and mathematics to the design of hardware, software, networks and processes to solve technical problems.

Over the past decade, computers have evolved into complex systems that may consist of single machines or many interconnected computers linked by a data network. In one form or another,

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computers now control most telephone and communications systems, process control and manufacturing automation systems, management information systems, household appliances, automobiles, transportation systems and medical instrumentation. Computers also form the core of the Internet. To work in the constantly evolving discipline of computer systems engineering, the computer engineer must acquire competence in both digital computer hardware and the fundamentals of software engineering.

Careers in computer engineering are as wide and varied as computer systems themselves. Systems range from embedded computer systems found in consumer products or medical devices; control systems for automobiles, aircraft and trains; to more wide-ranging applications in telecommunications, financial transactions and information systems.

The faculty of the Electrical and Computer Engineering Department at UAF seek to provide a positive learning environment that enables students to pursue their goals in an innovative program that is rigorous and challenging, open and supportive. The B.S. program develops practical skills by emphasizing hands-on experience in the design, implementation, and validation of electrical systems in an environment that fosters and encourages innovation and creativity. This approach builds the foundation for the program's educational objectives:

1. Breadth: Graduates will utilize their broad education emphasizing computer engineering to serve as the foundation for productive careers in the public or private sectors, graduate education, and lifelong learning.
2. Depth: Graduates will apply their understanding of the fundamental knowledge prerequisite for the practice of and/or advanced study in computer engineering, including its scientific principles, rigorous analysis, and creative design.
3. Professional Skills: Graduates will apply skills for clear communication, responsible teamwork, professional attitudes and ethics needed to succeed in the complex modern work environment.

These objectives serve the department, college and university missions by insuring that all graduates of the program have received a high quality, contemporary education that prepares them for a rewarding career in computer engineering.

Candidates for the B.S. degree are required to take the state of Alaska Fundamentals of Engineering Examination in their general field.

For more information about the computer engineering program mission, goals and educational objectives, visit www.uaf.edu/cem/ece/about/.

Major — B.S. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: MATH F200X, CHEM F105X and CHEM F106X or PHYS F213X.)*
2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete: MATH F201X, PHYS F211X and PHYS F212X.)*
3. Complete the following program (major) requirements:*
   - CS F201—Computer Science I 3
   - CS F202—Computer Science II 3
   - CS F301—Assembly Language Programming 3
   - CS F311—Data Structures and Algorithms 3
   - CS F321—Operating Systems 3
   - CS F331—Programming Languages 3
   - EE F102—Introduction to Electrical Engineering 3
   - EE F203—Electrical Engineering Fundamentals I 4
   - EE F204— Electrical Engineering Fundamentals II 4
   - EE F333W—Physical Electronics 4
   - EE F311—Applied Engineering Electromagnetics 3
   - EE F331—High Frequency Lab 1
   - EE F343—Digital Systems Analysis and Design 4
   - EE F353—Circuit Theory 3
   - EE F354—Engineering Signal Analysis 3
   - EE F443—Computer Engineering Analysis and Design 4
   - EE F444W,O—Embedded Systems Design 4
   - EE F463—Communication Networks 3
   - ES F101—Introduction to Engineering 2
   - ESM F450W—Economic Analysis and Operations 3
   - MATH F202X—Calculus III 4
   - MATH F302—Differential Equations 3
   - MATH F307—Discrete Mathematics 3
   - Approved electives** 9
   - Approved engineering science elective*** 3
4. Complete State of Alaska Fundamentals of Engineering examination
5. Minimum credits required 133

* *Students must earn a C grade (2.0) or better in each course.*

** *Recommended electives are: EE F334, EE F434, EE F451, EE F461, EE F464, EE F471, CS F361, CS F381, CS F472, CS F411, CS F421, CS F431, CS F471, CS F481*

*** *Engineering science elective to be chosen from ES F208, ES F331, ME F334, ES F341, ES F346.*

COMPUTER SCIENCE

College of Engineering and Mines
Department of Computer Science
907-474-2777
www.cs.uaf.edu

B.S., B.S./M.S. Degrees

Minimum Requirements for Degrees: B.S.: 120 credits; B.S./M.S.: 141 credits

Computer science is the study of information handling and its application to the problems of the world. Computing is widely used in support of science, engineering, business, law, medicine, education and the social sciences, and offers abundant employment opportunities.

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 B.S. degree is accredited by the Computing Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

The computer science undergraduate program introduces the fundamentals of computer programming, hardware and theory. It emphasizes the application of general principles to real-world problems. Mathematics and engineering play critical roles in the core. A solid background in fundamentals enables graduates to understand the uses of today's computers and to participate in future developments.

Major — B.S. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: MATH F200X* and any approved ethics course.)
2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete: MATH F201X*, PHYS F211X* and PHYS F212X*.)
3. Complete the following:*
   - MATH F307—Discrete Mathematics 3
   - STAT F300—Statistics 3

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4. Complete one of the following:*
   MATH F302—Differential Equations 3
   MATH F310—Numerical Analysis 3
   MATH F314—Linear Algebra 3
   MATH F371—Probability 3
   MATH F405W—Abstract Algebra 3
   MATH F408—Mathematical Statistics 3
   MATH F460—Mathematical Modeling 3

5. Complete the following program (major) requirements:*
   CS F201—Computer Science I 3
   CS F202—Computer Science II 3
   CS F301—Assembly Language Programming 3
   CS F311—Data Structures and Algorithms 3
   CS F321—Operating System 3
   CS F331—Programming Languages 3
   CS F411—Analysis of Algorithms (3)
   or CS F451—Automata and Formal Languages (3) 3
   CS F441—Systems Architecture (3)
   or EE F443—Computer Engineering (4) ....3 – 4
   CS F471W—Software Engineering 3
   CS F472W,O—Senior Project and Professional Practice 3
   EE F341—Digital and Computer Analysis and Design 4
   ENGL F314W,O/2—Technical Writing 3
   Electives in computer science at the F300- or F400-level
   or approved electives (such as EE F443) 9

6. Minimum credits required 120

* *Students must earn a C grade (2.0) or better in each course.*

Major — B.S./M.S. Degree

1. Complete the following admission requirements:
   a. CS major (junior preferred) or senior standing.
   b. GPA 3.25 or above based on a minimum of 24 credits. Students must maintain a cumulative GPA of 3.0 to remain in the program.
   c. Submit GRE (general) scores.
   d. Submit a study goal statement.
   e. Submit a UAF graduate application for admission.

2. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: MATH F200X* and any approved ethics course.)

3. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete: MATH F201X*, PHYS F211X* and PHYS F212X*.)

4. Complete the following program (major) requirements:*
   CS F201—Computer Science I 3
   CS F202—Computer Science II 3
   CS F301—Assembly Language Programming 3
   CS F311—Data Structures and Algorithms 3
   CS F321—Operating System 3
   CS F331—Programming Languages 3
   CS F441—Systems Architecture 3
   CS F471W—Software Engineering 3
   CS F472W,O—Senior Project and Professional Practice 3
   EE F341—Digital and Computer Analysis and Design 4
   ENGL F314W,O/2—Technical Writing 3
   MATH elective at F300/F400-level 3
   MATH F307—Discrete Mathematics 3
   STAT F300—Statistics 3

5. Complete the following master core courses:
   CS F611—Complexity of Algorithms 3
   CS F631—Programming Language Implementation 3
   CS F641—Advanced Systems Architecture 3
   CS F671—Advanced Software Engineering 3
   CS F690—Graduate Seminar and Project 3
   CS F691—Graduate Seminar and Project 3
   CS upper-division/graduate level electives 3
   CS graduate level electives 6

6. Pass a written comprehensive exam in the areas of computer algorithms/theory/complexity, computer architecture, computer language and software engineering.

7. Minimum credits required for both degrees 141

* *Students must earn a C grade (2.0) or better in each course required for the B.S. degree.*

Note: For the master's degree, a student must earn an A or B grade in F400-level courses. A grade of C (2.0) will be accepted in 600-level courses provided a B grade point average is maintained.

Note: This degree program must be completed in seven years or the student will be disqualified from the program. If a student is disqualified, a B.S. in computer science will be awarded if: 1) completed in 10 years, and 2) the student meets the B.S. degree requirements for computer science with the option of substituting CS F411/F451 for CS F611/F651.

Minor

1. Complete the following minor requirements:*
   CS F201—Computer Science I 3
   CS F202—Computer Science II 3
   Three electives at the F300- or F400-level from CS, EE F341, MATH F310, MATH F460; or electives approved by a computer science advisor 9

2. Minimum credits required 15

* *Students must earn a grade of C (2.0) or better in each course used to fulfill the minor requirements.*

Note: Courses completed to satisfy this minor can be used to simultaneously satisfy other major or general distribution requirements.

EARTH SCIENCE

College of Natural Science and Mathematics
Department of Geology and Geophysics
907-474-7565
www.uaf.edu/geology/

B.A. Degree

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.

Basic course work is designed to meet the National Science Teachers Association requirements for teaching secondary school earth science. Students arrange additional required course work and specialization emphasis in consultation with an undergraduate advisor and a faculty member from the appropriate department. Students wishing to enroll in this degree program should contact the head of the geology and geophysics department.

The earth sciences B.A. degree meets the undergraduate requirements for prospective secondary earth science teachers (grades 7 – 12).

Major — B.A. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: NRM F303X*, CHEM F103X and CHEM F104X or CHEM F105X and CHEM F106X or PHYS F103X and PHYS F104X).

2. Complete the B.A. degree requirements. (See page 136. As part of the B.A. degree requirements, complete: PHIL F481 for the humanities requirement.)

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3. Complete the following program (major) requirements:*
   GEOG F339—Maps and Landscape Analysis (4)
   or GEOS F408—Photogeology (2) ..... 2 – 4
   GEOG F307—Weather and Climate 3
   GEOG F402—Resources and Environment 3
   GEOS F101X—The Dynamic Earth 4
   GEOS F112X—The History of Earth and Life 4
   GEOS F225—Field and Computer Methods In Geology 3
   GEOS F262—Rocks and Minerals 3
   GEOS F304—Geomorphology 3
   GEOS F315W—Paleobiology and Paleontology (4)
   or BIOL F328O—Biology of Marine Organisms (3) ..... 3 – 4
   GEOS F422—Remote Sensing (3)
   or NRM F338—Introduction to GIS (3) 3
   MSL F111X—The Oceans 4
   NRM F101—Natural Resource Conservation and Policy 3
   PHYS F175X—Introduction to Astronomy 3
   Complete an additional approved 9 credit specialization emphasis at the F300-level or above with emphasis in geology, geography, biology, natural resources management or other earth science-related field as approved by the undergraduate advisor 9
4. Complete any UAF minor except geology. If appropriate, courses used to satisfy the specialization emphasis requirement can also be applied towards the requirements for a minor.
5. Minimum credits required 130

* *Students must earn a C grade (2.0) or better in each course.*

Note: The following courses are recommended to fulfill the upper-division writing and oral intensive requirements (2 "W" courses and 1 "O" course): GEOS F475WO, GEOS F463O, GEOS F315W, GEOG F490WO, NRM F304WO, or NRM F380W.

Note: Geography courses taken to meet the B.A. social science requirement may also be used to fulfill the specialization emphasis and (or) minor requirements. GEOG F402, a major requirement, also satisfies the B.A. social science requirement.

Note: In consultation with an undergraduate advisor, students should prepare an undergraduate study plan that includes specific courses to satisfy the major and minor complexes. This should be completed by the end of the sophomore year.

Note: We strongly recommend that prospective secondary science teachers seek advising from the UAF School of Education early in your undergraduate degree program, so that you can be appropriately advised of the state of Alaska requirements for teacher licensure. You will apply for admission to the UAF School of Education's post-baccalaureate teacher preparation program, a one-year intensive program, during your senior year. The Earth Science B.A. degree requirements will apply to the UAF School of Education during spring 2006 or later for licensure in secondary earth science.

ECONOMICS

School of Management
Department of Economics
907-474-7461
www.uaf.edu/som/programs/econ/

B.A., B.B.A. Degrees

Minimum Requirements for Degrees: 120 Credits

Economics is the study of social activities concerned with the production, distribution and consumption of goods and services. Nearly all social phenomena and problems have economic aspects, and therefore, knowledge of economic systems and their relations with each other is essential to an understanding of the complex world in which we live.

The department has three undergraduate instructional goals: to provide students with basic tools of analysis and the factual, statistical and descriptive materials they will need to perform their duties as citizens; to introduce economics majors to the various fields of economics to prepare them for positions in business and government and for graduate study; and to offer a course of study suitable for a minor in economics.

Major — B.A. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: MATH F262X* or MATH F200X.*)
2. Complete the B.A. degree requirements. (See page 136. As part of the B.A. degree requirements, complete: MATH F161X*, ECON F201 and ECON F202, and 3 credits of a political science elective.)
3. Complete the following foundation requirements:*
   ACCT F261—Accounting Concepts and Uses I 3
   ECON F227—Intermediate Statistics for Economics and Business 3
   ECON F321—Intermediate Microeconomics 3
   ECON F324—Intermediate Macroeconomics 3
   ECON F463W—International Economics 3
   STAT F200X—Elementary Probability and Statistics 3
   Economics electives at the F300-level or above** 18
4. Minimum credits required 120

* *Students must earn a C grade (2.0) or better in each course.*

** *Up to 6 credits of the following courses may be included: BA F325, F343 and F360. At least 6 credits of electives must be courses designated writing intensive (W).*

Major — B.B.A. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: MATH F262X* and BA F323X.*)
2. Complete the B.B.A. degree requirements. (See page 137. As part of the Common Body of Knowledge, complete AIS F310.)
3. Complete the following program (major) requirements:*
   ECON F321—Intermediate Microeconomics 3
   ECON F324—Intermediate Macroeconomics** 3
   ECON F350—Money and Banking II** 3
   ECON F463W—International Economics 3
   ECON F351—Public Finance (3)
   or ECON F451W—Public Expenditure Analysis (3) 3
   ECON F409W—Industrial Organization (3)
   or ECON F420W—Labor Markets and Public Policy (3) 3
   ECON F434W—Environmental Economics (3)
   or ECON F439W—Energy Economics (3) 3
   BA F460O—International Business 3
4. Complete a minor complex (optional) or free electives to meet minimum credits required.
5. Minimum credits required 120

* *Students must earn a C grade (2.0) or better in each course.*

** *If not taken in the B.B.A. Common Body of Knowledge (CBK).*

Note: At least 6 credits in the major must be courses designated writing intensive (W).

Minor

1. Complete the following:
   ECON F201—Principles of Economics I: Microeconomics 3
   ECON F202—Principles of Economics II: Macroeconomics 3
   Approved economics courses at the F300-level or above 12
2. Minimum credits required 18

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EDUCATION

School of Education
907-474-7341
www.uaf.edu/educ/

B.A. Degree and Post-baccalaureate Licensures

Minimum Requirements for Degree: 130 credits;
Post-baccalaureate secondary licensure: 31 credits;
Music Education: 33 credits (See the B.M. in Music Education).
Art K – 12 licensure: 34 credits

The University of Alaska Fairbanks complies fully with the institutional reporting requirements mandated in Title II of the Higher Education Act Amendments of 1998. Please contact the School of Education for a copy of the report.

The UAF School of Education prepares students from across Alaska, as well as from other states and nations, to work in urban and rural Alaska and to work with multicultural and minority — especially Alaska Native — students. To fulfill our commitment to enhancing educational opportunities for the state's rural and Native populations, faculty actively and knowledgeably utilize educational technology to deliver all School of Education programs to students in most areas of the state.

The School of Education offers bachelor's degrees in arts and sciences and elementary education; and post-baccalaureate programs in elementary education, secondary education, counseling, curriculum and instruction, and reading, several of which lead to state endorsements.

The UAF School of Education is approved by the Alaska Department of Education and Early Development to recommend its students for Alaska licensure as elementary and secondary teachers, reading specialists, and school counselors. Courses are available onsite and by distance delivery through the Kuskokwim, Bristol Bay, Interior-Aleutians, Chukchi, and Northwest campuses, as well as on the Fairbanks campus. Faculty research in cross-cultural studies, curriculum and instruction, language and literacy, and small rural schools supports the mission of the School of Education.

Priority for enrollment in field-based courses is given to rural students formally admitted to degree and licensure programs. All inquiries should be addressed to one of the rural campuses or to the School of Education's Student Services Office.

Candidates for elementary and secondary licensures are required to have use of/own a laptop computer: elementary, before enrolling in ED 329 and 344; secondary, before the fall semester. Computers may be of any type but must have capacities that enable candidates to meet School of Education requirements. Candidates enrolled in School of Education courses at any level (with the exception of 500 level professional development courses) are eligible to purchase a Macintosh laptop computer at a special discount through the School of Education. Laptop requirements and purchase information can be viewed by accessing the "Technology Requirement" link at the website of the School of Education, www.uaf.edu/educ/. If you have questions about how a laptop purchase will fit in with your current financial aid package, please contact the UAF Financial Aid Office.

Licensure Information

UAF education programs are approved by the Alaska State Board of Education and accredited by the National Council for the Accreditation of Teacher Education. For information about these programs, contact one of the UAF School of Education academic advisors.

Certification is awarded by the Alaska Department of Education and Early Development in Juneau. Therefore, students must meet all requirements specified by EED at the time of their application for the teaching certificate. In addition to completing an approved teacher training program, the state of Alaska requires that all initial applicants provide evidence of passing scores on one of various state identified skills tests; the UAF School of Education requires Praxis I for this purpose. For additional information, see the Alaska State Department of Education and Early Development website.

B.A. Degree, Elementary Education

Students in the bachelor of arts in elementary education degree program are assessed relative to national and state standards, including National Council for Accreditation of Teacher Education standards, the Alaska Teacher Standards, the Alaska Student Content and Performance Standards, and the Alaska Standards for Culturally Responsive Schools. Course work provides students on the Fairbanks campus and in remote sites with the experience necessary to be eligible for an elementary teacher license. The integrated major/minor degree requirements are designed to prepare students to meet standards that recognize, respect and build upon Alaska's cultural, linguistic and geographic factors.

The interdisciplinary degree requirements provide breadth in the content areas necessary for successful teaching at an elementary level. They provide depth in the opportunities to connect theory and practice in real classroom, school, and community contexts. Students completing this degree benefit from collaborative efforts with academic departments across campus and from School of Education partnerships with a wide range of Alaska's rural and urban schools and districts.

The degree has four central components: (1) subject area course work in the designated UAF core requirements; (2) additional subject area course work in those areas important for successful teaching at an elementary level; (3) an integrated set of education courses and fieldwork in schools and the community to provide the foundation for a successful professional internship year; and (4) a capstone year-long school internship with a mentor teacher, with concurrent enrollment in professional course work that focuses on the integration and application of theory, research and practice in real school environments. Students follow the calendar of the school or district in which they complete their internship. Candidates serving internships are charged a $150 fee per semester.

Degree and program requirements include multiple types of ongoing assessments throughout the programs. There is a strong emphasis on performance assessment and portfolio development and evaluation relative to national and state standards.

Transition/Admission Requirements

B.A. in elementary education students should enroll in the School of Education's recommended sequence of core and major course requirements during their first two years. By following the sequence recommended in Transition One (see School of Education website), students will be knowledgeable about their status relative to their progress toward meeting the criteria for admission to the professional internship year. To make certain that students will be able to receive the support necessary to prepare for the internship year, all B.A. in Elementary Education students are required to submit Praxis I scores (passing scores are not required until applying to the internship year) to the School of Education prior to enrolling in EDSE F482, and Praxis II (test 0014) test scores must be submitted with the Intern Year Admission packet. Prior to enrollment in professional-year courses and prior to receiving an internship placement in a classroom, all students must submit the materials listed below and meet admission requirements as described in Transition Two. **Declaring a B.A. major in elementary education does not guarantee admission to the professional internship year.**

Internships begin in August or September on the date when teachers return to school (this varies across districts). Since internship placements are arranged with principals and mentor teachers in the spring, all materials necessary for determining admission to the School of Education must be submitted by Feb. 1. Faculty in the School of Education consider multiple criteria in making valid and reliable judgments about each applicant's knowledge, skills, and

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professional characteristics prior to approval for the year-long internship in a classroom with elementary children.

Students must submit the following information to the School of Education by Feb. 1:

1. Copies of transcripts from all institutions attended.
2. Evidence of plan of completion of all B.A. degree in elementary education degree courses by August 1st (except for those required in the Professional Internship Year), with a minimum of a 2.75 overall GPA, a 2.0 in each major academic area, and a C or better in the UAF Core communication courses and in all required education and math courses. Students with less than a 2.75 overall GPA may be considered for conditional admission in special circumstances.
3. Alaska Passing scores from the Praxis I exams in reading, writing and math, and Praxis II exam (test 0014).
4. Two letters of reference that address qualifications and potential as a teacher.
5. A current and complete resume/curriculum vitae.
6. Two one-page essays on topics determined by the School of Education.
7. Completed Elementary Teacher Education Academic Analysis and Life/Work Form to provide information on breadth and depth of prior course work and/or documented life experiences relative to ten Alaska Student Content Standard areas.
8. A one-to-two-page autobiographical sketch (appropriate for presenting to prospective principals and mentor teachers).
9. Extemporaneous writing sample. Contact the School of Education advising office for date, time and location information.
10. Evidence of successful experiences in teaching and learning situations.
11. Evidence of ability to work collaboratively and respectfully in cross-cultural contexts.
12. Completed Alaska Student Teacher Authorization Packet (including fingerprint cards and criminal background check. Forms are available from the School of Education).
13. Complete an interview, when requested.
14. Some school districts may require interns to pass a general physical exam and require additional shot records.

Note: Students are admitted for a specific academic year and must reapply if they do not enroll in the year in which they were reviewed.

Major — B.A. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete the following*: ANTH/SOC F100X, HIST F100X, PS F100X, MATH F107X* or MATH F161X*, ART/MUS/THR F200X, BIOL F100X or BIOL F104X, CHEM F100X or PHYS F115X**. Students who choose the language option to meet core perspectives on the human condition requirements can submit their language credits only for the ENGL/FL F200X and the core ethics requirements.)
2. Complete the following B.A. degree and program (major) requirements:
   a. Complete the following mathematics requirements:*
   MATH F205—Mathematics for Elementary School Teachers I 3
   MATH F206—Mathematics for Elementary School Teachers II 3
   b. Complete one of the following:
   GEOS F100X—Introduction to Earth Science 4
   GEOS F101X—The Dynamic Earth 4
   GEOS F120X—Glaciers, Earthquakes and Volcanoes: Past, Present and Future 4
   PHYS F116X—Physical Science II ** 4
   c. Complete the following social sciences requirements:
   ANTH F242—Native Cultures of Alaska 3
   ED/PSY F245—Child Development 3
   GEOG F101—Expedition Earth: Introduction to Geography (3)
   or GEOG F203—World Economic Geography (3) 3
   HIST F131—History of the U.S. 3
   HIST F461W—History of Alaska (3)
   or HIST F115—Alaska, Land and Its People (3) 3
   PSY F101—Introduction to Psychology 3
   d. Complete the following humanities requirements:
   ENGL F271—Introduction to Creative Writing — Fiction (3)
   or ENGL F272—Introduction to Creative Writing — Poetry (3)
   or ENGL F314W,O/2—Technical Writing (3)
   or JRN F311W—Magazine Article Writing (3) 3
   ENGL F306—Survey of American Literature: Beginnings to the Civil War (3)
   or ENGL F307—Survey of American Literature: Civil War to Present (3)
   or ENGL F308—Survey of British Literature: Beowulf to the Romantic Period (3)
   or ENGL F309—Survey of British Literature: Romantic Period to the Present (3)
   or complete another literature-focus course (3) 3
   ED F486O/2—Media Literacy (3)
   or JRN F308—Film and TV Criticism 3
   e. ED/LING F100—Language, Linguistics and Education (3)
   or LING F101—Nature of Language (3) 3
   f. ED F329—Teaching with Technology 3
   g. Complete the following education requirements:*
   ED F110—Becoming a Teacher in the 21st Century 1
   ED F201—Introduction to Education 3
   ED F204—Literature for Children 3
   ED F330—Assessment of Learning 3
   ED F350—Communication in Cross-Cultural Classrooms (3)
   or ED/ANS F420—Alaska Native Education (3)
   or ED/ANS F461—Native Ways of Knowing (3) 3
   ED F344W—Foundations of Literacy Development 3
   EDSE F422—Curriculum and Strategies II: High Incidence 3
   EDSE F482—Inclusive Classrooms for All Children 3
   h. Complete the following professional internship year with integrated course work (first semester):
   ED F411—Reading, Writing, Language Arts: Methods and Curriculum Development 3
   ED F412W—Integrated Social Studies and Language Arts: Methods and Curriculum Development 3
   ED F466—Internship and Collaborative Student Teaching 3
   ED F467—Synthesizing the Standards I 1
   ED F478—Math Methods and Curriculum Development 2
   ED F479—Science Methods and Curriculum Development 2
   i. Complete the following professional internship year with integrated course work (second semester):
   ED F414—Art, Music and Drama in Elementary Classrooms 2
   ED F417—Physical and Health Education for Elementary Teachers 2
   ED F468O—Internship and Student Teaching 6
   ED F469—Synthesizing the Standards II 2
3. Minimum credits required 130

* *Students must earn a C grade (2.0) or better in each core communications, mathematics and education course.*

** *If PHYS F115X is completed for the core, a Students cannot take PHYS F116X to fulfill the science requirement in the major.*

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Minor — Education

Education — General

The General Education minor is designed for any student interested in education issues who does not intend to pursue a license in elementary or secondary education.

1. Complete the following:*
   - ED F110—Becoming a Teacher in the 21st Century 1
   - ED F201—Introduction to Education 3
   - ED F350—Communication in Cross-Cultural Classrooms (3)
     - or ANS/ED F420—Alaska Native Education (3) 3
   - PSY F240—Lifespan Developmental Psychology (3)
     - or ED/PSY F245—Child Development (3) 3
   - Approved education electives** 6
2. Minimum credits required 16

* *Practicum may be required in each education course.*

** *Contact the School of Education's Student Services Office for a list of approved elective courses.*

Education Minor — Elementary*

The elementary education minor is designed for students who intend to pursue a license in elementary education. Students who complete ED F110, F201, F330, F344 and EDSE F482 with grades of C or better will be allowed to substitute this sequence for ED F624, F625 and F626 in the post-baccalaureate elementary licensure program available on the UAF campus.

1. Complete the following:
   - ED F110—Becoming a Teacher in the 21st Century 1
   - ED F201—Introduction to Education 3
   - ED F204—Literature for Children.....3
   - ED F330—Assessment of Learning 3
   - ED F344—Foundations of Literacy Development.....3
   - ED F350—Communication in Cross-Cultural Classrooms (3)
     - or ANS/ED F420—Alaska Native Education (3) 3
   - EDSE F482—Inclusive Classrooms for All Children.....3
2. Minimum credits required 19

* *Practicum may be required in each education course.*

Education Minor — Secondary*

The secondary education minor is designed for students who are interested in pursuing careers as secondary education teachers. Students must complete all course work with grades of C (2.0) or better. Completion of EDSC F205 will meet the EDSC F415 requirement in the Secondary Licensure program requirement. Completion of EDSE F482 will meet the EDSC F414 requirement in the Secondary Licensure Program requirement.

1. Complete the following:
   - PSY F240—Lifespan Development Psychology (3)
     - or ED/PSY F245 Child Development (3) 3
   - EDSC F205—Introduction to Secondary Education (3)
     - or EDSC F415—Foundations of Modern Educational Practice (3) 3
   - EDSC F458—Classroom Organization and Management 3
   - EDSC F407—Developing Literacy in the Content Areas 3
   - EDSC F482—Inclusive Classrooms for All Children (3)
     - or EDSC F414—Learning, Development and Special Needs Instruction (3).....3
2. Minimum credits required 15

* *Practicum may be required in each education course.*

Secondary Post-Baccalaureate Licensure Program

Program delivery is offered in Fairbanks and in areas served by the College of Rural and Community Development (CRCD) campuses and their service areas with the exception of the Aleutian-Pribilof Center.

This is an intensive, classroom-based secondary licensure program (31 credits) that prepares post-baccalaureate candidates for secondary (grades 7 – 12) teaching positions. The program is specifically designed to prepare candidates to teach in multicultural settings in Alaska. Content that addresses multicultural issues in general, and Alaska rural issues in particular, is contained specifically in EDSC F457—Multicultural Education and School-Community Relations, and is a fundamental component of the course work within the program. When funding is available, all secondary Fairbanks candidates participate in a rural practicum.

Student outcomes for the program are based on the Standards for Alaska's Teachers located at: www.eed.state.ak.us/standards/pdf/teacher.pdf.

Students must apply to graduate with a certificate of completion through the Office of Admissions and the Registrar, Graduation Services. At the end of the program, if students have successfully met all of the program requirements, they will be eligible to apply for an Alaska initial teaching license.

Candidates who enter the Secondary Post-Baccalaureate Licensure program are required to have use of/own a laptop computer before they begin their internships in the fall semester of their professional year.

Program Options

Fast Track Option
The Fast Track Option is an intensive three-semester program that allows candidates (one year unpaid interns) to complete the secondary licensure program as full-time students in 12 months. Candidates take classes "summer-fall-spring." The academic year-long internship is completed during the fall and spring semesters.

Two-Year Option
The Two-Year Option allows candidates (two-year unpaid interns) to complete the secondary post-baccalaureate licensure program as part-time students over a period of 18 – 24 months. The last semester of the program requires full-time placement at a public school site.

Teaching While Training Option
The Teaching While Training Option is for candidates (teacher interns) who have secured a teaching position with an Alaskan School District. Generally, this option is available only to those candidates in areas of teacher shortage. Candidates complete the secondary post-baccalaureate licensure program over a period of 24 months.

Admissions Process and Requirements

Admission to the secondary post-baccalaureate licensure program includes meeting requirements of the UAF undergraduate admission process and of the School of Education. Students take their courses at the 400-level and will NOT be able to apply these courses towards a master of education degree.

Submit the following information to the UAF Office of Admissions:

1. UAF undergraduate application and application fee.
2. Official transcript of bachelor's degree from accredited institution, minimum GPA of 2.75. Applicants who have attended more than one university should include transcripts from all universities.

Submit the following information to the School of Education:

1. A personal statement of 500 – 800 words explaining your motivation for becoming a teacher. Describe how your academic qualifications and work experiences have prepared you for a career in teaching. Elaborate on your personal strengths, including your ability to work collaboratively with others. Describe your experiences with adolescents in

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instructional and supervisory capacities. Explain why you believe you can help young people of all cultures be successful in school.

2. A vitae/resume.
3. Three current letters of reference that address qualifications and potential as a teacher.
4. Extemporaneous writing sample. Contact the School of Education Advising Office for date, time and location information.
5. Alaska Passing scores from the Praxis I exam in reading, writing and mathematics.
6. Academic Content Testing
   a. Content Area Exams: Candidates must submit a score report from the relevant content knowledge Praxis II Subject test for each content area the applicant expects to reach. The scores must meet the score set by the State of Alaska (www.eed.state.ak.us/TeacherCertification/pdf/Content_Area_Exams_2008.pdf). In addition, World Language applicants must complete the World Language Exams.
   b. World Language Exams: Applicants applying to teach a World Language are required to submit Praxis II scores in the target language **AND** are required to submit scores for the ACTFL Oral Proficiency Interview (OPic II) and Writing Proficiency Test (WPI). Applicants must meet the Advanced Low rating for both tests (www.languagetesting.com).
7. Demonstrated evidence of content competency in one of the UAF approved secondary endorsement areas (www.uaf.edu/educ/secondary/endorsement_areas/).
   a. The applicant holds a degree in an approved UAF secondary endorsement area **or;**
   b. Those applicants who do **not** hold a degree in the academic content area that they expect to teach, **must** have documentation of content competency reviewed by a Secondary Program faculty review team prior to application to program. Additional course work may be required to enter the program.
8. Initial Content Preparation complete checklist of each content area you expect to teach (www.uaf.edu/educ/secondary/admissions/).
9. Demonstrated evidence of technology competence. Shown by successful completion of ED F237—Technology Tools, or by passing the School of Education's computer technology competency test. Applicants who have not met this requirement by the beginning of the summer program course work will be required to complete ED F237 during the summer program.
10. Applicants must submit a placement packet. Contact the School of Education for specific guidelines. The School of Education determines placement approval, change or termination.
11. All applicants will be required to interview with secondary faculty as part of the admission process.

Application Review Process

Applications are due March 1 and are reviewed thereafter for admission into the summer semester. Applications of outstanding candidates may be considered through spring semester. A candidate may be admitted, not admitted, or admitted with stipulations. Stipulations are specified when additional development in a particular area(s) is needed before beginning a secondary post-baccalaureate program.

The UAF School of Education coordinates with appropriate academic departments the review and evaluation of the candidate's qualifications, professional experiences and academic performance based on the contents of his/her application. The secondary post-baccalaureate program is a selective teacher education program. A comprehensive system including multiple measures is used to assess personal characteristics, communication skills and basic skills of candidates preparing to teach. Multiple assessment measures include a review of transcripts, content area strengths and/or Praxis II scores, personal statement and/or writing proficiency exams, Praxis I scores and letters of reference. A personal interview will be required as part of the admission process.

Upon Acceptance to the Program

The School of Education 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 the program, be advanced to the secondary teaching internship and eventually be recommended for a teaching license. In assessing candidate progress in knowledge, skills and disposition, faculty will review grades, observations, faculty recommendations, demonstrated academic competence and recommendations from the appropriate professionals in the schools. Systematic approaches are used to assist education candidates who are making unsatisfactory progress in their programs, but still maintain potential for successful completion.

Following are specific criteria for entry to the secondary teaching internship:

- successful completion of summer program courses;
- approval of faculty to enter the Secondary Education Internship;
- some school districts may require candidates to pass a general physical exam and require additional shot records; and
- State Alaska Certificate of Authorization, fingerprint cards and money order in the amount of $66 payable to the School of Education by June 1st (this fee is non-refundable once submitted to the state of Alaska). UAF School of Education provides these materials which will then be submitted to the state of Alaska for a criminal background check. Fees are subject to change.

Professional Field Experiences

The Secondary Post-Baccalaureate Licensure Program includes a comprehensive internship experience in an educational setting. Internship placements are arranged and supervised by university faculty in partnership with the principal and staff from the public school. University course work and classroom practice are closely linked and communication about performance in both the course work and classroom practice is shared among the partners. Internships follow the K – 12 school year calendar and not the university academic year calendar.

Performance in the internship must meet stated competencies and individual outcomes. Performance evaluations determine the candidate's progress toward meeting the State of Alaska Standards for Alaska's Teacher and the International Society for Technology in Education's National Education Technology Standards and Performance Indicators for All Teachers and performance guidelines of Specialty Performance Organizations.

It is expected that candidates will demonstrate appropriate professional characteristics with respect to their actions, attitudes and performance. Teacher candidates are required to adhere to the characteristics of professionalism as published in the Secondary Post-Baccalaureate Licensure Handbook, and to abide by the State of Alaska Code of Ethics of the Education Profession. Unacceptable academic performance, an unprofessional attitude, unsatisfactory field reports, violation of professional ethics, or other factors may result in removal from the field experience and denial of the Institutional Recommendation for teacher certification.

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Internship placements are made in partnership with participating school districts, which may request additional information and/or preparation from candidates according to the district's established policies and practices. Because cooperating districts also determine the number of placements available for candidates, placement may become competitive if the number of applicants exceeds the number of spaces. Districts also reserve the right to refuse or terminate placements when candidates do not meet a minimum standard of performance. Thus, while the University will make every effort to identify appropriate field experiences, admission to the Secondary Post-Baccalaureate Licensure program does not guarantee an internship placement.

Program Requirements

1. Complete the following for secondary licensure:
   - EDSC F402—Methods of Teaching in the Secondary School....3
   - EDSC F407—Reading Strategies for Secondary Teachers 3
   - EDSC F414—Learning, Development and Special Needs Instruction 3
   - EDSC F415—Foundations of Modern Educational Practices (3) or EDSC F205—Introduction to Secondary Education (3)
   - EDSC F431—Secondary Instruction and Assessment in the Content Area (3)*
     - or EDSC F432—English/Language Arts Secondary Instruction and Assessment (3)*
     - or EDSC F433—Mathematics Secondary Instruction and Assessment (3)*
     - or EDSC F434—Science Secondary Instruction and Assessment (3)*
     - or EDSC F435—Social Studies Secondary Instruction and Assessment (3)*
     - or EDSC F436—Art Secondary Instruction and Assessment (3) 3*
     - or EDSC F437—World Language Secondary Instruction and Assessment (3)
   - EDSC F442—Technology Applications in Education 3
   - EDSC F457—Multicultural Education and School-Community Relations.....4
   - EDSC F458—Classroom Organization and Management 3
   - EDSC F471—Secondary Teaching: School Internship I and Seminar 3
   - EDSC F472—Secondary Teaching: School Internship II and Seminar 3
2. Minimum credits required 31

* *Candidates must take the section or course that corresponds with their major teaching content areas.*

K – 12 Art Licensure Program

Offered on the Fairbanks campus only, this is an intensive, classroom-based K – 12 art licensure program (34 credits) that prepares post-baccalaureate candidates for K – 12 teaching positions. The program is specifically designed to prepare candidates to teach in multicultural settings in Alaska. The content will specifically identify and discuss current issues of art education and applying Alaska Content/Performance Standards and Frameworks as well as National Standards for Art Education.

At the end of the program, if students have successfully met all of the program requirements, they will be eligible to apply for an Alaska initial teaching license and will receive certificates of completion from UAF.

Candidates who enter the K – 12 Art Licensure program are required to have use of/own a laptop computer before they begin their internships in the fall semester of their professional year.

For program options and professional field experiences information, please see information listed in the catalog (page 158) for the Secondary Post-Baccalaureate Licensure program.

Admission Process and Requirements

Applicants will follow the admission process and requirements listed in the catalog (page 157) for the Secondary Post-Baccalaureate Licensure Program, with the exception that applicants must have a bachelor's degree in art from an accredited university or college. Applicants should be aware that additional content course work may be required, depending on content of degree. Additional course work, as determined by the appropriate departments, may mean a delay of program admission until requirements are fulfilled.

Program Requirements

1. Complete the following:
   a. Summer:
      - EDSC F415—Foundations of Modern Educational Practices (3) or EDSC F205—Introduction to Secondary Education.....3
      - EDSC F414—Learning, Development and Special Needs Instruction 3
      - PSY F240—Lifespan Development (3) or (preferred) PSY F245—Child Development (3).....3

   b. Fall:
      - EDSC F402—Methods of Teaching in the Secondary School....3
      - EDSC F436—Secondary Art Instruction and Assessment.....3
      - ED F453/ART F459—Secondary Internship 3
      - EDSC F458—Classroom Organization and Management 3

   c. Spring:
      - ED F449—Elementary Art Methods.....3
      - ED F452/ART F458—Elementary Internship.....3
      - EDSC F457—Multicultural Education and School-Community Relations.....4
      - EDSC F442—Technology Applications in Education 3
2. Minimum credits required 34

ELECTRICAL ENGINEERING

College of Engineering and Mines
Department of Electrical and Computer Engineering
907-474-7137
www.uaf.edu/cem/ece/

B.S. Degree

Minimum Requirements for Degree: 135 credits

The mission of the UAF Electrical and Computer Engineering Department is to offer the highest quality contemporary education at the undergraduate and graduate levels and to perform research appropriate to the technical needs of the state of Alaska, the nation and the world.

Electrical and computing engineering encompasses telecommunications, electrical power generation, transmission and distribution, control systems, and computer applications and design. Electrical engineers can typically expect gainful employment in one or more of these areas after graduation.

Communication engineers design, build and operate communication devices and systems, including satellites, antennas, wireless devices and computer networks. Electric power engineers design and oversee the construction, installation and maintenance of electrical systems that provide light, heat and power. Power engineers are also instrumental in the development of systems using modern power electronic devices to control power generation and distribution and build electric drives. People trained in computer engineering automate businesses, factories, pipelines and refineries. They design control systems and computers that guide trains, planes and space vehicles. Electrical engineers design the integrated circuits and automatic control systems used in many areas of science and

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engineering. Process controls in the mining and petroleum industries are also largely the responsibility of the electrical and computer engineer.

Undergraduate research and design project opportunities are available at UAF in the areas of communications, radar, sonar and lidar remote sensing, instrumentation and microwave circuit design, electric power and energy systems, digital and computer engineering and nanotechnology. The Student Rocket Project brings electrical and computer engineering and mechanical engineering students together to build and launch rockets at the Poker Flat Research Range, the only university-affiliated rocket range in the country. This program offers real engineering experience as well as fellowships, paid internships and scholarships.

The curriculum is designed to ensure that fundamentals and specialized skills are acquired by the student. The program prepares engineers to enter practice upon graduation and provides the theoretical background for students entering graduate studies. Candidates for the B.S. degree are required to take the state of Alaska Fundamentals of Engineering Examination in their general field.

The faculty of the Electrical and Computer Engineering Department at UAF seek to provide a positive learning environment that enables students to pursue their goals in an innovative program that is rigorous and challenging, open and supportive. The BSEE program develops practical skills by emphasizing hands-on experience in the design, implementation, and validation of electrical systems in an environment that fosters and encourages innovation and creativity. This approach builds the foundation for the following program educational objectives:

1. Breadth: Graduates will utilize their broad education emphasizing electrical engineering to serve as the foundation for productive careers in the public or private sectors, graduate education, and lifelong learning.
2. Depth: Graduates will apply their understanding of the fundamental knowledge prerequisite for the practice of and/or advanced study in electrical engineering, including its scientific principles, rigorous analysis, and creative design. The BSEE program offers depth concentration areas in communications, computer engineering, and power and control.
3. Professional Skills: Graduates will apply skills for clear communication, responsible teamwork, professional attitudes and ethics needed to succeed in the complex modern work environment.

These objectives serve the department, college and university missions by insuring that all graduates of the BSEE program have received a high quality, contemporary education that prepares them for rewarding careers in electrical engineering.

For more information about the Electrical Engineering Program mission, goals and educational objectives, visit www.uaf.edu/cem/ece/about/.

Major — B.S. Degree

Concentrations: Communications, Computer Engineering, Power and Control

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: MATH F200X, CHEM F105X and CHEM F106X or PHYS F213X.)*
2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete: MATH F201X, PHYS F211X and PHYS F212X.)*
3. Complete the following program (major) requirements:*
   EE F102—Introduction to Electrical Engineering 3
   EE F203—Electrical Engineering Fundamentals I.....4
   EE F204—Electrical Engineering Fundamentals II.....4
   EE F303—Electrical Machinery 4
   EE F311—Applied Engineering Electromagnetics.....3
   EE F331—High Frequency Lab.....1
   EE F333W—Physical Electronics.....4
   EE F334—Electronic Circuit Design 4
   EE F343—Digital Systems Analysis and Design.....4
   EE F353—Circuit Theory.....3
   EE F354—Engineering Signal Analysis.....3
   EE F471—Fundamentals of Automatic Control 3
   ES F101—Introduction to Engineering.....3
   ES F201—Computer Techniques 3
   ES F208—Mechanics.....4
   ESM F450W—Economic Analysis and Operations.....3
   MATH F202X—Calculus.....4
   MATH F302—Differential Equations 3
   Approved EE elective.....3 – 4
   Approved EE design elective .....3 – 4
   Approved engineering science elective** 3
   Approved mathematics elective*** 3
4. Complete state of Alaska Fundamentals of Engineering examination.
5. Complete one of the following concentrations:*

   Communications

   Complete the following:
   EE F412—Electromagnetic Waves and Devices.....3
   EE F432—Electromagnetics Laboratory 1
   EE F461—Communication Systems 4
   Approved engineering science elective** 3

   Computer Engineering

   Complete the following:
   EE F443—Computer Engineering Analysis and Design 4
   EE F451—Digital Signal Processing.....4
   EE F461—Communication Systems 4

   Power and Control

   Complete the following:
   EE F404—Electric Power Systems 4
   EE F406—Electrical Power Engineering.....4
   Approved engineering science elective** 3
6. Minimum credits required.....135

* *Students must earn a C grade (2.0) or better in each course.*

** *Engineering science elective to be chosen from ES F331, ME F334, ES F341 or ES F346.*

*** *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.*

Note: 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.

EMERGENCY MANAGEMENT

School of Management
Department of Business Administration
907-474-7461
www.uaf.edu/som/programs/bem/

B.E.M. Degree

Minimum Requirements for Degree: 120 – 121 credits

The Bachelor of Emergency Management degree program focuses on development of the skill sets required to lead and manage individuals and organizations in an increasingly more complex and integrated emergency management and homeland security environment. The program builds upon an individual's technical capabilities

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derived from education, training and experience in the fire, law enforcement, military or other related fields. This technical expertise is then combined with a curriculum of business administration and emergency management and homeland security instruction. This focus provides students with the operations management knowledge needed to lead and manage individuals, departments or agencies on a day-to-day basis while simultaneously preparing them to excel and lead during times of crisis at the local, regional, national or international levels. This degree is designed specifically to meet the needs of those who provide administrative oversight, supervisory control or leadership and management within the fields of fire, law, emergency medical services, security and other related fields at the local, state, federal and international levels. The degree also provides responders the opportunity to further their education, increase their competitive advantage for promotion and advance their operational understanding of the highly integrated emergency management and homeland security environment of today.

Major — B.E.M. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete MATH F107X* or MATH F161X* and STAT F200X.*)
2. Complete the B.E.M. degree requirements (page 137)*.
3. Complete 33 credits of major requirements from the UAF emergency services A.A.S. degree or any regionally accredited institution fire science A.A.S. degree with a cumulative GPA of 2.25 or higher.
4. Complete the following*:
   ACCT F261—Accounting Concepts/ Uses 3
   BA F307—Personnel Management 3
   BA F343—Principles of Marketing 3
   BA F390—Organizational Theory and Behavior 3
   BA F457—Training and Management Development 3
   ECON F201—Principles of Economics I: Microeconomics.....3
   ED F486O/2—Media Literacy 3
   ENGL F314 W, O/2—Technical Writing 3
   HSEM F301—Principles of Emergency Management and Homeland Security 3
   HSEM F412—Emergency Planning and Preparedness 3
   HSEM F423—Disaster Response Operations and Management.....3
   HSEM F434—All Hazards Risk Analysis 3
   HSEM F445—Business Continuity and Crisis Management 3
   HSEM F456—Leadership and Influence During Crisis 3
5. Complete 3 credits from the following:
   BA F317W—Employment Law 3
   BA F452W—Internship in Emergency Management 3
   BA F490—Services Marketing.....3
   COMM F300X—Communicating Ethics 3
   COMM F335O—Organizational Communications.....3
   COMM F353—Conflict, Mediation, and Communication.....3
   BA F490—Services Marketing.....3
6. Minimum credits required.....120 – 121

* *Students must earn a C grade (2.0) or better in each course.*

Note: Of the above, at least 39 credits must be taken in upper-division (F300-level or higher) courses.

Note: Must take two upper-division writing intensive and one upper-division oral intensive course(s).

ENGLISH

College of Liberal Arts
Department of English
907-474-7193
www.uaf.edu/english/

B.A. Degree

Minimum Requirements for Degree: 120 credits

The English department offers core courses in writing and literature, and upper-division courses in literature, linguistics, creative writing, technical writing and literary criticism. The department also offers a two-year M.A. degree in literature and a three-year M.F.A. degree in creative writing. Teaching assistantships are available for both programs. The M.A. degree offers advanced study of literature and literary theory as preparation for teaching or for entering a Ph.D. program. The M.F.A. is a terminal degree, culminating in the production of a publication-quality thesis manuscript of poetry, fiction, drama or creative non-fiction.

Major — B.A. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).
3. Complete the following:*
   a. ENGL F310—Literary Criticism 3
   b. Complete one of the following:
      ENGL F301—Continental Literature in Translation: The Ancient World.....3
      ENGL F302—Continental Literature in Translation: Medieval and Renaissance.....3
   c. Complete three of the following:
      ENGL F306—Survey of American Literature: Beginnings to the Civil War.....3
      ENGL F307—Survey of American Literature: Civil War to the Present.....3
      ENGL F308—Survey of British Literature: Beowulf to the Romantic Period.....3
      ENGL F309—Survey of British Literature: Romantic Period to the Present 3
   d. Complete one of the following:
      ENGL F422W,O/2—Shakespeare: History Plays and Tragedies 3
      ENGL F425W,O/2—Shakespeare: Comedies and Non-Dramatic Poetry.....3
   e. Complete one of the following:
      ENGL F317—Traditional English Grammar 3
      ENGL F318—Modern English Grammar.....3
      ENGL F462—Applied English Linguistics.....3
      ENGL F472—History of the English Language 3
   f. Complete one of the following:
      ENGL F410W,O/2—Studies in American Literature up to 1900.....3
      ENGL F415W,O/2—Studies in 17th and 18th Century British Literature.....3
      ENGL F420W,O/2—Studies in Medieval and 16th Century British Literature.....3
      ENGL F440W,O/2—Studies in 20th and 21st Century British Literature.....3
      ENGL F450W,O/2—Studies in 19th Century British Literature.....3
      ENGL F455W,O/2—Studies in 20th and 21st Century American Literature.....3
      ENGL F460W,O/2—Studies in Comparative/World Literature 3

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g. Complete one of the following:
ENGL F435—Authors 3
ENGL F465—Genre 3
h. Complete three ENGL F300- and ENGL F400-level courses (at least one at the F400-level) 9

4. Minimum credits required 120

* *Students must earn a C grade (2.0) or better in each course.*

Recommended courses for students interested in creative writing:

ENGL F273—Introduction to Creative Non-Fiction 3
ENGL F371W,O—Intermediate Creative Writing 3
ENGL F471W—Undergraduate Writer's Workshop 3

Requirements for English Teachers (Grades 7 – 12)*

1. Complete all the requirements for the English B.A. degree.

2. All prospective English teachers must complete the following:
ENGL/FL F200X—World Literature 3
LING F101—Nature of Language 3
ED F486O—Media Literacy 3
ENGL F317—Traditional English Grammar (3)
or ENGL F318—Modern English Grammar (3) 3
ENGL F472—History of the English Language 3
ENGL F485—Teaching Composition in the Schools 3
A writing course — see list of approved electives 3
Two multicultural literature courses, including one Alaska Native literature course, from list of approved electives 6

Note: above courses can also be used as Humanities electives for B.A. degree requirements. If ENGL/FL F200X is used to meet core requirements, it may not meet the B.A. humanities electives requirement.

* *Please ask your advisor for an advising sheet for teaching majors. We strongly recommend that prospective secondary English teachers seek advising from the UAF School of Education early in their undergraduate degree program, so that they can be appropriately advised of the State of Alaska requirements for teacher licensure. They will apply for admission to the UAF School of Education's post-baccalaureate one-year intensive teacher preparation program during their senior year. These new English degree requirements apply to all candidates who apply to the UAF School of Education for spring 2006 or later.*

Minor

1. Complete two of the following:
ENGL F301—Continental Literature in Translation: The Ancient World (3)
or ENGL F302—Continental Literature in Translation: Medieval and Renaissance (3) 3
ENGL F306—Survey of American Literature: Beginnings to the Civil War 3
ENGL F307—Survey of American Literature: Civil War to the Present 3
ENGL F308—Survey of British Literature: Beowulf to the Romantic Period 3
ENGL F309—Survey of British Literature: Romantic Period to the Present 3

2. Complete the following:
ENGL F422W,O/2—Shakespeare: History Plays and Tragedies (3)
or ENGL F425W,O/2—Shakespeare: Comedies and Non-Dramatic Poetry (3) 3
ENGL electives at the F300- or F400-level 9

3. Minimum credits required 18

ENVIRONMENTAL POLITICS

College of Liberal Arts
Department of Political Science
907-474-7609
www.uaf.edu/polisci/

Minor only

Students in the minor program in environmental politics explore the local, national and international contexts within which key decisions about the environment are made. Courses examine philosophical and theoretical perspectives on the environment; ways in which different countries address issues of resource development and environmental regulations; international environmental laws, treaties, and institutions; relationships between environmental protection and national security; relationships between politics and environmental science; and the effects of environmental concerns on the international political economy.

The minor may be used in conjunction with any B.A. degree program, including political science, or as an optional addition to any B.S. degree program. For further information, contact the Department of Political Science.

Minor

1. Complete the following*:
PS F101—Introduction to American Government and Politics 3

2. Complete 12 elective political science credits from the following:
PS F447—U.S. Environmental Politics 3
PS F454—International Law and the Environment 3
PS F455O—Political Economy of the Global Environment 3
PS F456O—Science, Technology and Politics 3
PS F458—Comparative Environmental Politics 3

3. Minimum credits required 15

* *PS F100X is recommended to fulfill the political economy requirement of the core curriculum.*

ESKIMO

College of Liberal Arts
Department of Alaska Native Languages
907-474-7874
www.uaf.edu/anlc/classes/

B.A. Degree

Minimum Requirements for Degree: 120 credits

Eskimo languages are spoken by far northern people from the northeastern tip of Siberia, across Alaska and Canada, to East Greenland. The Eskimo languages include the four Yupik languages of Alaska and Siberia as well as Inuit, the Alaska sector of which is called Inupiaq. In terms of population and numbers of speakers, Central Alaskan Yup'ik is by far the largest Alaska Native language; Inupiaq is the second largest. Eskimo languages are the linguistic heritage of more than half of Alaska's Native population.

Students who obtain a B.A. in Central Yup'ik or Inupiaq Eskimo may be employed as Native language instructors or language specialists for school districts or Native organizations. No other university in the United States offers a B.A. in Eskimo.

Students in linguistics or anthropology may want to complete a minor in Eskimo to add a distinctly Alaska emphasis to their education.

Inupiaq Eskimo — B.A. Degree

1. Complete the general university requirements (page 131).

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2. Complete the B.A. degree requirements (page 136).

3. Complete the following program (major) requirements:*
ANL F315—Alaska Native Languages: Eskimo-Aleut.....3
ESK F111—Elementary Inupiaq Eskimo 5
ESK F112—Elementary Inupiaq Eskimo 5
ESK F211—Intermediate Inupiaq Eskimo 3
ESK F212—Intermediate Inupiaq Eskimo 3
ESK F417—Advanced Inupiaq Eskimo.....3
LING F101—Nature of Language (3)
or ANS F320W—Language and Culture: Applications to Alaska (3) 3

4. Complete three of the following:*
ANL F287—Teaching Methods for Alaska Native Languages...3
ANL F316—Alaska Native Languages: Indian Languages 3
ANS/ENGL F349—Narrative Art of Alaska Native Peoples (in English Translation).....3
ANTH F242—Native Cultures of Alaska.....3
ESK F417—Advanced Inupiaq Eskimo.....3
HIST F110—History of Alaska Natives 3
LING/ED F303W,O—Language Acquisition 3
LING F318—Introduction to Phonetics and Phonology 3
LING F320—Introduction to Morphology.....3
LING F410O—Theory and Methods of Second Language Teaching.....3
LING F430—Historical Linguistics.....3
LING F450O—Language, Policy and Planning.....3
MUS F223—Alaska Native Music 3
PS F263—Alaska Native Politics 3
Yup'ik Eskimo course or approved course.....3

5. Minimum credits required.....120

* *Students must earn a C grade (2.0) or better in each course.*

Yup'ik Eskimo — B.A. Degree

1. Complete the general university requirements (page 131).

2. Complete the B.A. degree requirements (page 136).

3. Complete the following program (major) requirements:*
ANL F315—Alaska Native Languages: Eskimo-Aleut.....3
ESK F101—Elementary Central Yup'ik Eskimo 5
ESK F102—Elementary Central Yup'ik Eskimo 5
ESK F201—Intermediate Central Yup'ik 3
ESK F202—Intermediate Central Yup'ik 3
ESK F301—Advanced Central Yup'ik Eskimo.....3
ESK F415—Additional Topics in Advanced Yup'ik Eskimo 3
LING F101—Nature of Language (3)
or ANS F320W—Language and Culture: Applications to Alaska (3) 3

4. Complete two of the following:*
ANL F287—Teaching Methods for Alaska Native Languages...3
ANL F316—Alaska Native Languages: Indian Languages 3
ANS/ENGL F349—Narrative Art of Alaska Native Peoples (in English Translation).....3
ANTH F242—Native Cultures of Alaska.....3
HIST F110—History of Alaska Natives 3
LING/ED F303W,O—Language Acquisition 3
LING F318—Introduction to Phonetics and Phonology 3
LING F320—Introduction to Morphology.....3
LING F430—Historical Linguistics.....3
LING F450O—Language, Policy and Planning.....3
MUS F223—Alaska Native Music 3
PS F263—Alaska Native Politics 3
Inupiaq Eskimo course or approved course 3

5. Minimum credits required.....120

* *Students must earn a C grade (2.0) or better in each course.*

Minor

1. Complete Eskimo electives.....15
2. Minimum credits required.....15

FILM

College of Liberal Arts
Department of Theatre
907-474-6590
www.uaf.edu/theatre/

B.A. Degree

Minimum Requirements for Degrees: 120 credits

A degree in film will provide students with a critical understanding of the history, theory and technologies of cinema and new media arts, while giving students the opportunities, tools and resources needed for careers in media industries, to pursue graduate study, or become media artists. Through an interdisciplinary approach to film and media studies, the program will produce media-literate professionals who can play a leading role in an increasingly information-centered world where every profession will require skilled media creators.

Film students will have opportunities to produce their own creative, time-based content for a wide variety of multimedia applications. Emphasis will be placed on the cultures, lifestyles and environments of Alaska and the North, and the unique opportunities they afford for skilled media creators and artists.

Major – B.A. Degree

1. Complete the general university requirements (page 131).

2. Complete the B.A. degree requirements (page 136).

3. Complete the following program (major) requirements:*
a. Complete the following:
FLM/ART F172—Previsualization and Preproduction for Digital Cinema 3
FLM/ENGL F217—Introduction to the Study of Film.....3
FLM/JRN F290—Digital Video Editing 3
FLM/THR F334W—Movies and Films.....3
FLM/THR F271—Let's Make a Movie (3)
or FLM/JRN F280—Video Storytelling 3
FLM/THR F331—Directing Film/Video (3)
or FLM/JRN F480—Documentary Filmmaking 3
b. Complete 6 credits from Film Studies, including at least one upper division course:
FLM/JRN F105—History of the Cinema 3
FLM/ANS F381—Alaska Natives in Film.....3
FLM/ JRN F308—Film Criticism 3
FLM/JRN/HIST F368—Topics in American Film History 3
FLM/ENG F427—Topics in Film Studies.....3
c. Complete a minimum of 12 credits from Film Production, including at least one upper division course:
THR F121—Fundamentals of Acting 3
FLM/JRN F251—Television Production.....4
FLM/JRN F280—Video Storytelling.....3
FLM/THR F310—Acting for the Camera 3
FLM/ART F371—Digital Photography and Pixel Painting.....3
FLM/THR F347O—Lighting Design 3
FLM F358—Lights, Camera, Audio 3
FLM/ART/ANTH F460 – Cross-Cultural Filmmaking 3
FLM/THR F470—Advanced Film and Video Directing 3
FLM /ART F472—Visualization and Animation.....3
FLM/ART F475 – Digital Video Compositing.....3
FLM/ENG/THR F488—Dramatic Writing 3
FLM F481—Special Topics in Film Production 3

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FLM F493—Independent Study 3
FLM F418—Internship in Film Production .....1 – 6
FLM F498—Film Research 3
FLM F499—Film Thesis 3

4. Of the above, students must complete 15 credits at the F300- or F400-level, at least 6 credits of which must be at the F400-level

5. Minimum credits required 120

* *Students must earn a C grade (2.0) or better in each course.*

Note: Courses used to satisfy the major cannot be used for the minor.

Film Studies Minor

1. Complete the following:
THR/FLM F271—Let's Make a Movie 2
THR/FLM F331—Directing Film/Video 3
THR/FLM F334W—Movies and Films 3

2. Complete a minimum of 9 credits from:
ENGL/FLM F217—Introduction to the Study of Film 3
JRN/FLM F105—History of the Cinema 3
THR F121—Fundamentals of Acting 3
THR/FLM F215—Dramatic Literature 3
THR/FLM F310—Acting for the Camera 3
THR/FLM F347O—Lighting Design 3
THR F348—Sound Design in the Entertainment Industry 3
THR/FLM F470—Advanced Film and Video Directing 3

3. Minimum credits required 17

FISHERIES

School of Fisheries and Ocean Sciences
Fisheries Program
907-474-7289
www.sfos.uaf.edu/academics/

B.A., B.S. Degree

Minimum Requirements for Degrees: B.A.: 125 credits; B.S.: 120 credits

The undergraduate programs in fisheries offer students broad education and training, preparing graduates to work as professionals in fisheries management, research, conservation, education, policy, harvest and marketing organizations. The programs also provide a solid foundation for graduate study for students contemplating careers in advanced research and management, administration or teaching.

The B.S. degree in fisheries provides students with the knowledge base, skill sets and hands-on experience to obtain positions within state, federal and non-governmental fisheries and natural resources conservation and management agencies in Alaska and throughout North America. Graduates with this degree will be particularly qualified to work for traditional state, provincial, federal, Alaska Native, and Native American agencies in the areas of marine and freshwater fisheries biology and management and fisheries social science.

The B.A. degree in fisheries provides students with the knowledge base, skill sets, and hands-on experience to obtain positions within the fishing and seafood processing industries in Alaska and throughout North America. Graduates with this degree will be qualified to work for traditional fisheries governmental agencies in the areas of business administration, policy development, fisheries education and outreach, or as social scientists.

The minor gives students who are majoring in other areas (i.e. wildlife biology, natural resources management, business, rural and community development, journalism, etc.) a solid introductory background in fisheries.

Fisheries students have opportunities to work with professionals from federal, state, local, tribal and private groups during their required internship or research project. These organizations often hire fisheries students for summer internships, which can turn into full-time jobs after graduation.

The undergraduate fisheries program is administered through the UAF Fairbanks campus. Students have the option of completing their program in Fairbanks or Juneau, with many fisheries courses offered via distance education for students in other outlying areas. The undergraduate fisheries program is designed as a 2+2 program in which students may complete their first two years at UAF, UAS or UAA (or other local UA campus) and their last two years in either Fairbanks or Juneau as a UAF student. Students who are interested in the 2+2 option must contact the UAF fisheries program.

Fairbanks offers an excellent location for the study of Interior Alaska aquatic habitats with a number of subarctic streams and lakes within easy reach. The Juneau Center has ready access to both marine and freshwater habitats and freshwater and seawater wet labs. The Fishery Industrial Technology Center, located in Kodiak, has facilities for work in harvest technology, seafood technology, seafood biochemistry and microbiology.

Major — B.A. Degree

1. Complete the general university requirements (page 131).

2. Complete the B.A. degree requirements (page 136).

3. Complete the following:*
ACCT F261—Accounting Concepts and Uses I 3
ANS F350W,O—Cross Cultural Communication: Alaskan Perspectives (3)
or ANS F401—Cultural Knowledge of Native Elders 3
ANTH F403W/O—Political Anthropology (3)
or ANTH F428—Ecological Anthropology and Regional Sustainability 3
BA F307—Introductory Human Resources Management (3)
or BA F343—Principles of Marketing 3
BA F390—Organizational Theory and Behavior (3)
or BA F330—The Legal Environment of Business (4) ....3 – 4
ECON F235—Introduction to Natural Resources 3
ENGL F314 W,O—Technical Writing 3
FISH F101—Introduction to Fisheries 3
FISH F261—Introduction to Fisheries Utilization 3
FISH F288—Fish and Fisheries of Alaska 3
FISH F411—Human Dimensions of Environmental Systems ...3
FISH F490—Experiential Learning Internship 1
NRM F407—Environmental Law (3)
or HIST F411—Environmental History (3) 3
PS F447—U.S. Environmental Politics (3)
or PS F454—International Law and the Environment (3)
or PS F455O—Political Economy of the Global Environment (3)
or PS F458—Comparative Environmental Politics (3) 3
RD F300W—Rural Development in a Global Perspective (3)
or RD F350O—Indigenous Knowledge and Community Research (3)
or RD F430—Indigenous Economic Development and Entrepreneurship (3) 3
STAT F200X—Elementary Probability and Statistics 3
Upper division fisheries elective 3

4. Minimum credits required 125

* *Students must earn a C grade (2.0) or better in each course.*

Major — B.S. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete MATH F200X or F272X.) Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete STAT F401 or STAT F402.)

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2. Complete the following fisheries core requirements:*
   BIOL F115X—Fundamentals of Biology I**.....4
   BIOL F116X—Fundamentals of Biology II**.....4
   BIOL F271—Principles of Ecology.....4
   BIOL F310—Animal Physiology.....4
   BIOL F362—Principles of Genetics.....4
   BIOL F473W—Limnology (4)
   or MSL F411—Current Topics in Oceanographic Research (3)
   or BIOL F476—Ecosystem Ecology (3)
   or BIOL F483—Stream Ecology (3)
   or FISH F440—Introductory Oceanography for Fisheries (3).....3 – 4
   CHEM F105X—General Chemistry I**.....4
   CHEM F106X—General Chemistry II**.....4
   ECON F235—Introduction to Natural Resource Economics (3)
   or ECON F201—Principles of Economics I: Microeconomics (3).....3
   ENGL F414W—Research Writing.....3
   FISH F101—Introduction to Fisheries.....3
   FISH F288—Fish and Fisheries of Alaska.....3
   FISH F301—Biology of Fishes (4)
   or BIOL F305—Invertebrate Zoology.....4
   FISH F315—Freshwater Fisheries Techniques (3)
   or FISH F414—Field Methods in Marine Ecology and Fisheries (3).....3
   FISH F411—Human Dimensions of Environmental Systems.....3
   FISH F425—Fish Ecology (3)
   or FISH F426—Behavioral Ecology of Fishes (3)
   or FISH F428—Physiological Ecology of Fishes.....3
   FISH F487W,O—Fisheries Management.....3
   FISH F490—Experiential Learning Internship.....1
   PHYS F103X—College Physics**.....4
   STAT F200X—Elementary Probability and Statistics.....3
   STAT F401—Regression and Analysis of Variance*** (4)
   or STAT F402—Scientific Sampling***.....3
3. Complete 12 credits of electives* from Fisheries, Biology or Natural Resource Management (of which at least 4 credits must be upper division).
4. Complete 4 credits of electives* from Chemistry, Geology or Physics.
5. Complete 4 credits of other electives*.
6. Minimum credits required.....120

* *Students must earn a C grade (2.0) or better in each course.*

** *Courses completed in the fisheries core may be used to meet the core natural sciences or B.S. degree natural science requirements but not both.*

*** *STAT F401 or STAT F402 may be used to meet the B.S. degree mathematics requirements.*

Note: Fisheries majors are encouraged to reinforce their fisheries qualifications by earning a minor in a program related to fisheries. Some examples are biology, business management, chemistry, economics, mathematics, natural resources management (animal science), northern studies, statistics or wildlife.

Minor

1. Complete the following:
   FISH F101—Introduction to Fisheries (3)
   or NRM F101—Natural Resources Conservation and Policy (3).....3
   FISH F288—Fish and Fisheries of Alaska.....3
2. Students must take at least 6 additional credit hours designated FISH, with the exception of any FISH F492 courses.
3. Students may apply at most 3 credit hours from one of the following concentrations:

Fisheries Science

BIOL F305—Invertebrate Zoology.....5
BIOL F310—Animal Physiology.....3
BIOL F328—Biology of Marine Organisms.....3
BIOL F441—Animal Behavior.....3
BIOL F471—Population Ecology.....3
BIOL F472W—Community Ecology.....3
BIOL F473W—Limnology.....4
BIOL F476—Ecosystem Ecology.....3
BIOL F483—Stream Ecology.....3
NRM F370—Introduction to Watershed Management.....3

Fisheries Business Administration and Economics

ACCT F261—Accounting Concepts and Uses I.....3
ACCT F262—Accounting Concepts and Uses II.....3
BA F151—Introduction to Business.....4
BA F307—Introductory Human Resources Management.....3
BA F325—Financial Management.....3
BA F330—The Legal Environment of Business.....3
BA F343—Principles of Marketing.....3
BA F390—Organizational Theory and Management.....3
ECON F200—Principles of Economics.....3
ECON F235—Introduction to Natural Resources Economics..3
ECON F335—Intermediate Natural Resource Economics.....3
ECON F434—Environmental Economics.....3

Fisheries Policy and Rural Development

ANS F350W,O—Cross Cultural Communication: Alaskan Perspectives.....3
ANS F401—Cultural Knowledge of Native Elders.....3
ANTH F242—Native Cultures of Alaska.....3
ANTH F403W/O—Political Anthropology.....3
ANTH F428—Ecological Anthropology and Regional Sustainability.....3
HIST F411—Environmental History.....3
NRM F407—Environmental Law.....3
NRM F430—Resource Management Planning.....3
PS F101—Introduction to American Government and Politics.....3
PS F447—U.S. Environmental Politics.....3
PS F454—International Law and the Environment.....3
PS F455O—Political Economy of the Global Environment.....3
PS F458—Comparative Environmental Politics.....3
RD F200—Community Development in the North.....3
RD F245—Fisheries Development in Rural Alaska.....3
RD F256—Co-management of Renewable Resources.....3
RD F265—Perspectives on Subsistence in Alaska.....3
RD F300W—Rural Development in a Global Perspective.....3
RD F350O—Indigenous Knowledge and Community Research.....3
RD F430—Indigenous Economic Development and Entrepreneurship.....3

4. Minimum credits required.....15

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FOOD SCIENCE AND NUTRITION

School of Fisheries and Ocean Sciences
School of Natural Resources and Agricultural Sciences
907-474-7824
907-474-7083
www.sfos.uaf.edu
www.uaf.edu/snras/

Food science is the study of the chemical, biological and engineering aspects of food and its components. Knowledge from diverse scientific disciplines is integrated to develop new methods for processing and fabricating foods while assuring safe, nutritious and acceptable products.

From a chemical, microbiological and physical standpoint, food is the most complex of all natural products. Food science is a high-technology field; the results of research and development reach people and animals daily as safe, nutritious and acceptable foods.

This program emphasizes the food uses of fish, game and other traditional foods. It provides students majoring in a natural science, engineering, northern agriculture or management with a strong emphasis area in food science and nutrition. The food industry is the largest employer in the United States, and job openings are available for people trained as food technologists.

The following courses are part of the food science and nutrition program:

FISH F261—Introduction to Seafood Science and Nutrition 3
FISH/FSN F460—Food Science and Technology Internship .....3 – 6

FOREIGN LANGUAGES

College of Liberal Arts
Department of Foreign Languages and Literatures
907-474-7396
faforei@uaf.edu
www.uaf.edu/language/

B.A. Degree

Minimum Requirements for Degree: 120 credits

Language is the embodiment of culture and an expression of a people's way of thinking, feeling and viewing the world. We have an increasing need to communicate directly with other peoples to achieve mutual understanding. To learn a new language opens new avenues of thought, new modes of expression and new models of understanding. The study of foreign languages and literatures liberates the student from the confines of one culture.

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

Major — B.A. Degree

Concentrations: Two Languages, Single Language (French, German, Spanish)

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).
3. Complete one of the two following concentrations:*

Two Languages Concentration

a. Complete a minimum of 18 credits at the F200-level or above in the first language: French, German, Japanese, Russian or Spanish. These must include two F400-level courses in the target language taken in residence at UAF.

b. Complete a minimum of 15 credits at the F200-level or above in the second language: French, German, Japanese, Russian or Spanish.

French, German or Spanish Concentration

a. Complete a minimum of 30 credits in the target language at the F200-level or above. These may include target language courses and/or courses taken in the target language on an approved study abroad program and up to 6 credits of advisor-approved electives from Education or Linguistics, but must include two F400-level courses in the target language taken in residence at UAF.

Japanese: see requirements under Japanese Studies major
Russian: see requirements under Russian Studies major

4. Minimum credits required 120

* *Students must earn a C grade (2.0) or better in each course.*
** *Students may repeat any F400-level language course for credit if the topics vary.*
*** *F400-level course from another discipline appropriate to the major language may be accepted if approved by your foreign language advisor.*
**** *The second language does not satisfy the minor requirements.*
Note: In addition to a first and second language, students should complete a well-defined minor related to their career goals. When choosing a minor it is highly recommended that students see an advisor as early as possible.
Note: Recommended background courses: LING F101 and LING F216.
Note: F100-level language courses (which are preparatory to, but not part of the foreign language degree) may be counted toward fulfillment of requirements specified under Perspectives on the Human Condition and/or Humanities. Each language counts as a separate discipline.

Minor

1. Complete the following:
   Foreign language credits at the F100-level or above 3
   Foreign language credits at the F200-level or above 12
2. Minimum credits required 15

GENERAL SCIENCE

College of Natural Science and Mathematics
Department of Physics
907-474-6108
www.uaf.edu/physics/

B.S. Degree

Minimum Requirements for Degree: 130 credits

The B.S. degree program in general science provides a broad background in the natural sciences. The program allows specialization in at least two disciplines within the natural sciences as well as an additional area of associated interest. This degree offers more breadth in the natural sciences than other degree programs and may be classified as an interdisciplinary degree.

Major — B.S. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.S. degree requirements (page 136).
3. Complete the following program (major) requirements:*
   BIOL F115X—Fundamentals of Biology I 4
   BIOL F116X—Fundamentals of Biology II 4
   CHEM F105X—General Chemistry*** 4
   CHEM F106X—General Chemistry*** 4
   GEOS F101X—The Dynamic Earth 4
   GEOS F112X—The History of Earth and Life 4
   MATH F107X—Functions for Calculus 4
   MATH F108—Trigonometry 3

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MATH F200X—Calculus** 4
PHYS F103X—College Physics***.....4
PHYS F104X—College Physics***.....4

4. Select one of the following by the start of the junior year:****
   a. Two majors.
   b. One major and two minors.
5. Complete one major from the following: biological sciences, chemistry, geosciences or physics. The major requires the completion of at least 20 credits in addition to the foundation courses in the discipline.* 20
6. Complete one of the following*:
   a. Complete a second major from the following: biological sciences, chemistry, geosciences, physics or mathematics. The major requires the completion of at least 20 credits in addition to the foundation courses in the discipline. 20
   b. Complete 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 or economics. The minor must include 12 or more credits in addition to the foundation courses in that discipline.....24
7. Minimum credits required 130

* *Students must earn a C grade (2.0) or better in each course.*

** *A student does not need to take MATH F107X and MATH F108 if the student completes MATH F200X with a C or better. Complete a B.S. degree mathematics elective for 3 credits if MATH F107X and MATH F108 are not taken.*

*** *PHYS F211X, F212X and F213X may substitute for PHYS F103X and F104X. CHEM F212 may substitute for CHEM F105X and F106X.*

**** *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.*

Requirements for General Science Teachers (grades 7 – 12)

1. Complete all the requirements of the general science B.S.
2. If the student opts for one major and two minors, all must represent science or mathematics disciplines:
3. All prospective science teachers must complete the following:
   PHIL F481—Philosophy of Science (3).....3

Note: We strongly recommend that prospective secondary science teachers seek advising from the UAF School of Education early in your undergraduate degree program so that you can be appropriately advised of the state of Alaska requirements for teacher licensure. You will apply for admission to the UAF School of Education's post-baccalaureate teacher preparation program, a one-year intensive program, during your senior year. Above requirements apply to all candidates who apply to the UAF School of Education Spring 2006 or later for licensure in General Science.

GEOGRAPHY

School of Natural Resources and Agricultural Sciences
UA Geography Program
907-474-7494
www.uagp.uaf.edu

B.A., B.S. Degrees

Minimum Requirements for Degrees: 120 credits

Geography provides a holistic view of the earth, its distinct and varied regions, as well as the types of and interaction between human activities and the physical world. Geography is the two-way bridge between the physical and social sciences as it explores the interrelationships between the earth's physical and biological systems and how these environmental systems provide a natural resource base for human societies. Geography also provides the framework for the integration of new and emerging technologies such as GIS and remote sensing with studies in a broad range of academic disciplines.

Geographers are interested in patterns and processes of physical and social change, including climate change, geographic information science and technologies, human settlement patterns, natural resources distribution and management, environmental studies, and in the inherent "sense of place" among peoples throughout the world. Geographic methodologies include observation, measurement, description and analysis of places including likenesses, differences, interdependence and importance.

The geography B.A. degree provides broad cultural training and background in the liberal arts with an emphasis on the circumpolar North and Pacific Rim. The B.A. also provides a geographic perspective based on these regions and prepares students for careers in management, policy, teaching, field-based research, regional planning and private sector careers. The B.A. also provides an excellent foundation for advanced studies in a wide range of academic disciplines.

Three emphasis options are available to students pursuing the B.S. degree: environmental studies, landscape analysis and climate change studies, and geographic information science and technology.

Environmental studies provides the foundation necessary for understanding the natural and social environment, analysis of environmental issues from an interdisciplinary geographic perspective, a diverse technical and scientific approach to environmental issues, and the ability to find balanced solutions to environmental problems.

Landscape analysis and climate change studies integrate and synthesize courses in geography, climate change, physical and biological sciences, and geographic information sciences and technology. Students will gain a sound and interdisciplinary understanding of how environmental change influences landscape patterns and humans on both spatial (e.g. latitude, altitude) and temporal (e.g. past, future) scales. Senior practicum courses serve as integrating "capstone experiences" enabling students to apply what they have learned in real-world settings.

Geographic information science and technology emphasizes skills and practices in geographic information science, systems, technology and analytical aspects of geography. Courses in statistics, computer programming, GIS, GPS and remote sensing are integrated with the geography core curriculum and courses in natural sciences.

A minor in geography is also available.

Major — B.A. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).
3. Complete the following required foundation courses:*
   GEOG F101—Expedition Earth: Introduction to Geography...3
   GEOG F111X—Earth and Environment: Elements of Physical Geography.....4
   GEOG F312—People, Places, and Environment: Principles of Human Geography 3
   GEOG F338—An Introduction to GIS 3
   GEOG F490W,O—Geography Seminar.....3
4. Complete the following program (major) requirements. Students will tailor their program through course selection from the categories below in consultation with their advisor to focus on a subspecialty in the Circumpolar North and/or the Pacific Rim.
   a. Regional Geography: Complete two of the following:
      GEOG F302—Geography of Alaska.....3
      GEOG F303—Geography of United States and Canada 3
      GEOG F305W—Geography of Europe 3
      GEOG F306—Geography of Russia 3
      GEOG F311W—Geography of Asia.....3
      GEOG F410—Geography of the Pacific Rim 3
      GEOG F427—Polar Geography 3

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b. Physical Geography: Complete one of the following:
GEOG F339—Maps and Landscape Analysis....3
GEOG F307—Weather and Climate 3
GEOG F412—Geography of Climate Change....3
GEOG F418—Biogeography 3

c. Human Geography: Complete one of the following:
GEOG F203—World Economic Geography....3
GEOG F402—Resources and Environment 3
GEOG F404—Urban Geography....3
GEOG F405—Political Geography....3

d. Technique: Complete one of the following:
GEOG F301—Geographic Field Studies....3
GEOG F309—Digital Cartography and Geo-Visualization....4
GEOS F458—Geoscience Applications of GPS and GIS....3

e. Electives: Complete two courses (six credits) from any of the above categories, or other courses appropriate to the student's chosen program of study. Both courses must be at F300-level or higher and approved by the student's advisor.

5. Complete approved electives....open

6. Minimum credits required....120

Note: Geography majors are encouraged to reinforce their program focus with a minor in one of the following areas:
Alaska Native Studies, Anthropology, Asian Studies, Economics, Environmental Politics, Foreign Languages, Geology, Geophysics, Global Studies, History, Journalism, Natural Resource Management, Northern Studies, Political Science, Rural Development, Russian Studies

Note: Students and faculty advisors should carefully review prerequisites for courses outlined in each required and/or optional area. In some instances courses, either in geography or other fields, require successful completion of from 1 – 3 prerequisite courses. Therefore, students and faculty should note minimum degree credit hours are 120, but the actual number of required course credits may exceed that number.

Major — B.S. Degree

1. Complete the general university requirements (page 131).

2. Complete the B.S. degree requirements (page 136).

3. Complete the following required foundation courses:*
GEOG F101—Expedition Earth: Introduction to Geography...3
GEOG F111X—Earth and Environment: Elements of Physical Geography....4
GEOG F312—People, Places, and Environment: Principles of Human Geography 3
GEOG F338—An Introduction to GIS 3
GEOG F490W,O—Geography Seminar....3

4. Complete one of the following options:*

Geography Option I — Environmental Studies

a. Complete the following:
GEOG F207—Research Methods and Statistics in Geography....3
GEOG F307—Weather and Climate 3
GEOG F339—Maps and Landscape Analysis....3
GEOG F402—Resources and Environment 3

b. Complete 6 credits from the following environmental studies electives:
GEOG F463—Wilderness Concepts 3
NRM F303X—Environmental Ethics and Actions** 3
NRM F407—Environmental Law....3

c. Complete 9 credits from the following environmental system electives:
ANTH F428—Ecological Anthropology and Regional Sustainability***....3
BIOL F271—Principles of Ecology***....4
BIOL/NRM F277—Introduction to Conservation Biology*** 3
GEOS F304—Geomorphology 3
NRM F375—Forest Ecology***....3
NRM F380W—Soils and the Environment*** 3

d. Complete 3 credits from the following environmental management electives:
FISH F487W,O—Fisheries Management*** 3
NRM F365—Principles of Outdoor Recreation Management ...3
NRM F430—Resource Management Planning....3
NRM/WLF F431—Wildlife Law and Policy*** 3
NRM F450—Forest Management*** 3
NRM F480—Soil Management for Quality and Conservation***....3

e. Complete one of the following techniques courses:
GEOG F301—Geographic Field Studies....3
GEOG F309—Digital Cartography and Geo-Visualization....4
GEOG F435—GIS Analysis....4
GEOS F458—Geoscience Applications of GPS and GIS*** 3

Geography Option II — Landscape Analysis and Climate Change Studies:

a. Complete B.S. degree options, STAT F200X or 300, and prerequisite courses BIOL F115X, BIOL F116X, and CHEM F105X.

b. Complete the following Processes requirements (geomorphology, climate, ecology, systems):
GEOG F307—Weather and Climate 3
GEOG F412—Geography of Climate and Environmental Change....3
GEOG F418—Biogeography 3
BIOL F271—Principles of Ecology***....4
GEOS F304—Geomorphology*** 3

c. Complete one of the following Processes electives:
BIOL F467—Ecosystems of Alaska***....3
or BIOL F469 O—Landscape Ecology and Wildlife Habitat (3)***
or NRM F370—Watershed Management (3)***
or NRM F380 W—Soils and the Environment(3)***
or a processes-oriented content course approved by Geography faculty advisor.

d. Complete the following Patterns requirements (Field Methods, GIS/Remote Sensing Tools):
GEOG F309—Digital Cartography and Geo-Visualization....4
GEOG F339—Maps and Landscape Analysis....3
GEOG F435—GIS Analysis....4
GEOS F458—Geoscience Applications*** 3

e. Complete at least one of the following Patterns electives:
GE F471—Remote Sensing for Engineering***....3
or GEOS F422—Geoscience Applications of Remote Sensing*** 3
or GEOS F434—Remote Sensing of the Cryosphere***.....3
or NRM F641—Remote Sensing Applications in Natural Resources***....4

f. Complete the following Senior Practicum requirements (program synthesis):
GEOG F488—Geographic Assessment and Prediction of Natural Hazards....3
GEOG F489W—Senior Practicum: Field Studies in Landscape Analysis and Climate Change....4

Geography Option III — Geographic Information Science and Technology (GIS&T)

a. Complete B.S. degree options, including prerequisite course, PHYS F103X.

b. Complete the following GIS&T breadth:
CS F103—Introduction to Computer Programming***....3
STAT F200X—Elementary Probability and Statistics***....3
GEOG F339—Maps and Landscape Analysis....3
GEOG F435—GIS Analysis....3

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GEOG F300—Internship in Natural Resources Management and Geography.....3

c. Complete at least two courses of remote sensing electives:
GE F471—Remote Sensing for Engineering***.....3
GEOS F422—Geoscience Applications of Remote Sensing***.....3
GEOS F434—Remote Sensing of Cryosphere*** 3
NRM F641—Remote Sensing Applications in Natural Resources 4

d. Complete at least two courses of GIS electives:
GE F376—GIS in Geological and Environmental Engineering***.....3
GEOG F309—Digital Cartography and Geo-Visualization.....4
GEOS F458—Geoscience Applications of GPS and GIS*** 3
NRM F638—GIS Programming◊.....3

e. Complete at least two courses in Landscape electives:
BIOL F469O—Landscape Ecology and Wildlife Habitat***.....3
GEOS F304—Geomorphology*** 3
GEOS F408—Photogeology***.....3
GEOS F430—Statistics and Data Analysis in Geology*** 3

5. Minimum credits required.....120

* *Students must earn a C grade (2.0) or better in each course.*
** *If used to fulfill core requirements, NRM F303X may not also count towards geography major.*
*** *Prerequisites required.*
◊ *Graduate level credit used to complete this undergraduate degree program may NOT be applied towards future graduate degree programs.*

Note: Students and faculty advisors should carefully review prerequisites for courses outlined in each required and/or optional area. In some instances, courses, either in geography or other fields require successful completion of from 1 – 3 prerequisite courses. Therefore, students and faculty should note minimum degree credit hours are 120, but the actual number of required course credits may exceed that number.

Minor

1. Complete the following:
GEOG F101—Expedition Earth: Introduction to Geography (3)
or GEOG F203—World Economic Geography (3) 3
GEOG F111X—Earth and Environment: Elements of Physical Geography 4
GEOG electives.....8 – 9

2. Minimum credits required.....15

GEOLOGICAL ENGINEERING

College of Engineering and Mines
Department of Mining and Geological Engineering
907-474-7388
http://ge.uaf.edu

B.S. Degree

Minimum Requirements for Degree: 134 credits

The mission of the geological engineering program is to advance and disseminate knowledge related to mineral and energy exploration, evaluation, development and production; engineering site selection, construction and construction material production; and groundwater and geo-environmental engineering including geologic hazards assessment, through creative teaching, research and public service with an emphasis on Alaska, the North and its diverse peoples.

Geological engineering deals with the application of geology in the environment. Properties of earth materials exploration activities, geophysical and geochemical prospecting, site investigations and engineering geology are all phases of geological engineering.

The program prepares students for employment with industry, consulting companies and government agencies.

The educational objectives of the geological engineering program are to produce:

1. Graduates who are employable in one of the following professional areas: mineral and energy exploration and development; geotechnical engineering; groundwater engineering; or geo-environmental engineering.
2. Graduates will possess technical knowledge required to meet the unique challenges of geological engineering problems germane to cold regions, especially Alaska.
3. Graduates will pursue life-long learning through continuing education opportunities, professional registration/certification, and/or graduate studies.

For more information about the Geological Engineering Program mission, goals and educational objectives, visit http://ge.uaf.edu.

Major — B.S. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.S. degree requirements (page 136).
3. Complete the following program (major) requirements:*
CHEM F105X—General Chemistry** 4
CHEM F106X—General Chemistry** 4
ES F201—Computer Techniques 3
ES F208—Mechanics.....4
ES F331—Mechanics of Materials.....3
ES F341—Fluid Mechanics 4
GE F101—Introduction to Geological Engineering.....1
GE F261—General Geology for Engineers.....3
GE F365—Geological Materials Engineering.....3
GE F375—Principles of Engineering Geology and Terrain Analysis 3
GE F381W—Field Methods and Applied Design I 2
GE F382W—Field Methods and Applied Design II.....4
GE F405—Exploration Geophysics.....3
GE F420—Subsurface Hydrology.....3
GE F471—Remote Sensing for Engineering 3
GE F480W—Senior Design.....3
GEOS F213—Mineralogy 4
GEOS F214—Petrology and Petrography.....4
GEOS F322—Stratigraphy and Sedimentation.....4
GEOS F332—Ore Deposits and Structure.....3
MATH F200X—Calculus I**.....4
MATH F201X—Calculus II**.....4
MATH F202X—Calculus III** 4
MATH F302—Differential Equations 3
MIN F202—Mine Surveying 3
MIN F370—Rock Mechanics 3
MIN F408O—Mineral Valuation and Economics.....3
PHYS F211X—General Physics** 4
PHYS F212X—General Physics** 4
STAT F200X—Elementary Probability and Statistics 3
Technical electives***.....6

4. Minimum credits required.....134

* *Students must earn a C grade (2.0) or better in each ES, GE, GEOS, MIN and technical elective courses.*
** *Satisfies core or B.S. degree requirements but not both.*
*** *Technical elective credits must contain engineering design and be selected by the student from a list of approved technical electives from the geological engineering program in conference with his or her advisor and approved by the department.*

Note: Candidates for the B.S. degree in geological engineering are required to take the state of Alaska Fundamentals of Engineering examination, which is a first step toward registration as professional engineers.

Note: Students may initiate their geological engineering program in Anchorage and transfer to Fairbanks upon completion of the freshman and sophomore years. Students intending to transfer to UAF should communicate with a faculty member of the UAF mining and geological engineering department.

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GEOLOGY

College of Natural Science and Mathematics
Department of Geology and Geophysics
907-474-7565
www.uaf.edu/geology/

B.S. Degree

Minimum Requirements for Degree: 130 credits

Graduates in geology have broad backgrounds in the earth sciences and firm foundations in mathematics, physics and chemistry. There are many concentrations available in the geological sciences, and the suggested curricula are intended to be flexible enough to allow students to pursue their own emphasis in the junior and senior years. The bachelor's degree prepares students for positions with industry or government or for graduate studies.

Major — B.S. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete MATH F200X, CHEM F105X and F106X.)
2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree, complete: STAT F200X or F300; PHYS F103X and F104X, or PHYS F211X and F212X.)
3. Complete the following program (major) requirements:*
   GEOS F101X—The Dynamic Earth 4
   GEOS F112X—The History of Earth and Life.....4
   GEOS F213—Mineralogy 4
   GEOS F214—Petrology and Petrography.....4
   GEOS F225—Field and Computer Methods in Geology 2
   GEOS F304—Geomorphology 3
   GEOS F314—Structural Geology 4
   GEOS F315W—Paleobiology and Paleontology 4
   GEOS F322—Stratigraphy and Sedimentation.....4
   GEOS F351W—Field Geology** 8
   GEOS F430—Statistics and Data Analysis in Geology.....3
   MATH F201X—Calculus II 4
   Electives.....open
4. Complete 15 credits of upper-division GEOS courses or upper-division courses as approved by the undergraduate advisor.*
5. Minimum credits required.....130

* *Students must earn a C grade (2.0) or better in each GEOS course and in all courses that fulfill requirement 4.*

** *GEOS F351 is offered at UAF when there is sufficient demand. In years when GEOS F351 is not offered (decision made early in fall semester), students are required to take a 6-credit field geology class at another institution. The geology and geophysics undergraduate advisor will assist students in placement in a field geology class.*

Note: Students interested in a program in geophysics are encouraged to pursue a major in geology which includes GEOS F418 and F416 with a minor in physics. Students should consult with the geology department regarding constructing a plan of study.

Minor

1. Complete the following:
   GEOS F101X—The Dynamic Earth 4
   Approved GEOS electives.....12
2. Minimum credits required.....16

GLOBAL STUDIES

College of Liberal Arts
907-474-7231
www.uaf.edu/cla/

Minor Only

The minor in global studies is an interdisciplinary program whose purpose is to enhance students' understanding of issues resulting from an increasingly interdependent world. The global studies program provides students pursuing a bachelor's degree an opportunity to broaden their intellectual horizon beyond their chosen major and achieve a more integrated vision of contemporary global problems, alternative conceptions of global society and relevant strategies for moving toward a more just and humane world order.

Minor

1. Complete one entry level course from among the following:
   ANTH F245—Culture and Global Studies 3
   GEOG F203—World Economic Geography.....3
   ENGL F280—Colonial and Post-Colonial Literature.....3
   PS F202—Democracy and Global Society 3
2. Complete four different courses (12 credits) from one of the following concentrations:

Global Economic and Political Dynamics
ANTH F446—Economic Anthropology 3
PS F201—Comparative Politics.....3
PS F323—International Political Economy 3
RD F300W—Rural Development in a Global Perspective 3
SOC F460—Global Issues in Sociological Perspective.....3

Culture and Global Society
ANTH/RD F315—Tribal People and Development 3
ANTH/WMS F445—Gender in Cross-Cultural Perspective.....3
COMM F330—Intercultural Communication.....3
ENGL F218—Themes in Literature: Colonial and Post-Colonial Literature 3
ENGL F360—Multi-Ethnic Literatures of the United States.....3
LING F216—Languages of the World.....3
PHIL F482—Comparative Philosophy and Religions 3

Science Policy and the Environment
ANTH F428—Ecological Anthropology and Regional Sustainability 3
BIOL F476—Ecosystem Ecology.....3
GEOG/NRM F338—Introduction to Geographic Information Systems.....3
HIST F411—Environmental History.....3
NRM/NORS F432—Literature and the Environment.....3
PS F454—International Law and the Environment 3
PS F455O—Political Economy of the Global Environment.....3
PS F456O—Science, Technology and Politics 3

Peace, Human Rights and Global Society
ENGL F280—Introduction to Colonial and Post-Colonial Literature 3
ENGL F380—Topics in Colonial and Post-Colonial Literature 3
HIST F316—Europe since 1945.....3
PHIL/PS F472—Ethics and International Affairs 3
PS F203—Peace, War and Security 3
PS F322O—International Law and Organization.....3
SOC F405O—Social Movements and Social Change 3

3. Complete a civic engagement/internship project .....1 – 3
4. Minimum credits required.....16 – 18

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HISTORY

College of Liberal Arts
Department of History
907-474-7126
www.uaf.edu/history/

B.A. Degree

Minimum Requirements for Degree: 120 credits

The history department seeks to make students aware of human cultural heritage, the great problems that have faced humans throughout history and how we have sought to solve them.

The department also trains students to apply 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 learn effective historical research and writing.

Through the study of history, students 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.

Major — B.A. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete HIST F100X.)*
2. Complete the B.A. degree requirements (page 136).
3. Complete the following program (major) requirements:*
   a. Complete three of the following:
      HIST F101—Western Civilization 3
      HIST F102—Western Civilization 3
      HIST F121—East Asian Civilization 3
      HIST F122—East Asian Civilization 3
      HIST F131—History of the U.S. 3
      HIST F132—History of the U.S. 3
   b. Complete the following:
      HIST F275—Perspectives on History 3
   c. Complete 5 HIST courses at the F300- or F400-level, at least 2 of which must be at the F400-level. 15
   d. Of the courses for the major, at least two (at any level) must be taken in each of the following three fields. These courses must be approved by an advisor.
      1. United States history
      2. European history
      3. Other areas, such as
         Northern history (including Alaska)
         World or non-western (non-U.S., non-European) history
         Women's history
   e. Complete the following:
      HIST F475W—Historiography 3
      HIST F476W/O—Senior Thesis 3
4. Minimum credits required 120

* *Students must earn a C grade (2.0) or better in each course.*

Note: Students who are considering graduate work in history are strongly urged to take at least two years of a foreign language.

Note: History majors are strongly urged to consult with the history department regarding the selection of a minor.

Minor

1. Complete HIST electives at the F300-level or above 6
2. Complete HIST electives 12
3. Minimum credits required 18

INTERDISCIPLINARY STUDIES

Office of Interdisciplinary Programs
907-474-7716
fyinds@uaf.edu
www.uaf.edu/gradsch/classes/interdisciplinary-program/

B.A., B.S., B.T. Degrees

Minimum Requirements for Degrees: 130 credits

The UAF interdisciplinary program provides flexibility to students who have well-defined goals that do not fit into one of the established majors offered by the university. Two tracks are available for students. First, programs with well-defined interdisciplinary goals that do not fit into established majors, and second, a general studies degree completion option. The program, with well-defined goals, is available to undergraduate and graduate students (see page 230 for graduate information). Interdisciplinary studies, both graduate and undergraduate programs, are administered by the Graduate School office. Help with the application process, contact information for faculty advisors and assistance for interdisciplinary students is available at 907-474-7716 or see www.uaf.edu/gradsch/classes/interdisciplinary-program/.

Interdisciplinary Goals Option

Students may submit a proposal for an interdisciplinary program after completing 15 credits at UAF as long as they have at least 30 credits remaining in the proposed degree program. 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 B.A., B.S. or B.T. degree must be met.

In developing an interdisciplinary proposal, the student should specify the degree (B.A., B.S. or B.T.), include an explanation of how the proposed program differs substantially from established UAF programs, and include a discussion showing that current UAF resources are adequate to meet the requirements of the proposed program. (A minimum of two disciplines is required for the interdisciplinary degree.) The student then obtains an advisory committee of at least three faculty members from the appropriate disciplines and holds at least one formal meeting with the full committee to review the proposal. The committee will appoint a chair, review the proposed program, select a degree title in concert with the student and make its recommendation. Applicants then submit the proposal for the program they wish to pursue to the Dean of the Graduate School, specifying the degree, proposed curriculum work sheet and rationale. The degree is awarded through the school or college of the chair of the committee, subject to approval by the Dean of the Graduate School.

Students interested in pursuing an undergraduate interdisciplinary degree can contact the Office of the Graduate School and Interdisciplinary Programs for help in finding faculty advisors and developing their curriculum proposal.

General Studies Degree Completion Option (may not be used as a double major)

Students may not declare this major until they have accumulated at least 100 credits.

B.A., B.S. or B.T. degree

1. Contact the UAF Office of the Graduate School and Interdisciplinary Programs for materials and procedures. Prepare and submit a rationale/justification letter.
2. Three faculty members serving in the Academic Advising Center or at Rural Campuses will serve as the degree completion interdisciplinary studies committee.

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3. Prepare rationale/justification letter explaining the need for the degree completion program.
4. Conduct committee meeting to finalize degree proposal.
5. Submit to the dean of the Graduate School for final approval.
6. Complete all the requirements for the baccalaureate program including
   a. Completing the Core curriculum
   b. Completing the residency requirement
   c. Completing 39 upper-division credits
   d. Completing the PRAXIS I pre-professional skills test. This test should be completed when Core requirements are satisfied but may be taken the last semester in the program.
7. Minimum credits required.....130

JAPANESE STUDIES

College of Liberal Arts
Department of Foreign Languages and Literatures
907-474-7396
www.uaf.edu/language/

B.A. Degree

Minimum Requirements for Degree: 120 credits

Students majoring in Japanese studies are required to successfully complete at least one semester on an exchange program in Japan. Spending a full academic year abroad is strongly encouraged.

Major — B.A. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).
3. Complete the following Japanese Studies core requirements (all courses in this category are taught in Japanese):* (15)
   JPN F301—Advanced Japanese**.....3
   JPN F302O—Advanced Japanese**.....3
   JPN F431—Studies in Japanese Culture**.....3
   JPN F432—Studies in Japanese Language**.....3
   JPN F475—Seminar on Contemporary Japan.....3
4. Complete 6 credits from the following Japanese Studies electives:*
   JPN F330—Classical Japanese Literature.....3
   JPN F331W—Women's Voices in Japanese Literature.....3
   JPN F332—Japanese Cultural Traditions and Arts.....3
   JPN F333—Twentieth Century Japanese Prose Fiction.....3
   JPN F482—Selected Topics in Japanese.....3
5. Complete 12 additional credits from the following Japan-related electives as approved by an advisor:* *** ****
   JPN F210—Beginning Kanji.....2
   JPN F310—Intermediate Kanji.....2
   JPN F311—Advanced Kanji.....2
   JPN F330—Classical Japanese Literature.....3
   JPN F331W—Women's Voices in Japanese Literature.....3
   JPN F332—Japanese Cultural Traditions and Arts.....3
   JPN F333—Twentieth Century Japanese Prose Fiction.....3
   JPN F482—Selected Topics in Japanese.....3
   HIST F121—East Asian Civilization.....3
   HIST F122—East Asian Civilization.....3
   HIST F331—Modern Japan.....3
   HIST F333—Foundations of Japanese History.....3
   HIST F414—Women and Gender in East Asian History.....3
   GEOG F311W—Geography of Asia.....3
   PS F321—International Politics.....3
   PS F464W—East Asian Governments and Politics.....3
6. Completion of semester exchange in Japan or written departmental approval.**
7. Minimum credits required.....120

* *Students must earn a C grade (2.0) or better in each course.*
** *After completion of language training through the 202-level, students may study in Japan as long as they complete a minimum of 15 credits of Japanese language study at the upper-division level to fulfill the Japanese Studies core requirements. JPN F475 must be taken in residence at UAF.*
*** *Instructor-approved Japan-related courses taken during time abroad may count toward this requirement.*
**** *Courses taken to satisfy requirement 4 may not be retaken or otherwise counted to satisfy requirement 5.*
Note: Students planning a double major for a single B.A. may double count a maximum of 9 credits from the major requirements toward a second major. Students earning two degrees (B.A./B.B.A.) are not subject to double counting restrictions.

Minor

1. Complete the following:
   Japanese course credits at the 100-level or above.....3
   Japanese course credits at the 200-level or above.....12
2. Minimum credits required.....15

JOURNALISM

College of Liberal Arts
Department of Journalism
907-474-7761
www.uaf.edu/journal/

B.A. Degree

Minimum Requirements for Degree: 123 – 124 credits

The journalism program offers a solid curriculum designed to prepare students to leave the classroom and be ready to take their places in the nation's newsrooms.

In addition to the solid academic background they receive 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, a student-owned FM station and the campus newspaper. Off campus, students have opportunities to intern with a variety of radio and television stations, newspapers and other media-related businesses and organizations, both in and out of Alaska.

The department runs several laboratory facilities including a news writing/digital photography lab, a multimedia lab, a digital audio production lab, a digital video editing lab, two photography labs and a photography studio, and an electronic newsroom. The department is accredited by the Accrediting Council on Education in Journalism and Mass Communication.

Major — B.A. Degree

Concentrations: Broadcast Journalism, New Media, News-Editorial, Photojournalism

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements. (See page 136. As part of the B.A. degree requirements, complete HIST F132*.)
3. Complete the following program (major) requirements:*
   JRN F101—Introduction to Mass Communications.....3
   JRN F202—News Reporting and Writing.....3
   JRN F400—Professional Media Internship.....3
   JRN F413—Mass Media Law and Regulation.....3
   JRN F421—Journalism in Perspective.....3
   JRN F490—Online Publication: "Extreme Alaska".....3
4. Complete credits outside of journalism**.....80

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5. Complete one of the following concentrations:*

Broadcast Journalism

a. Complete the following:
- JRN F215—Radio Production 3
- JRN F251—Television Production....4
- JRN F452W—Radio and Television News Writing 3
- JRN F453O—Television News Reporting....3

b. Complete two courses from the list of approved journalism electives.

c. Minimum credits required....124

New Media

a. Complete the following:
- JRN F250—Website Design....3
- JRN F323—Editing for Journalists 3
- JRN F390—New Media Toolkit....3
- JRN F484—Multimedia Theory and Practice....3

b. Complete two courses from the list of approved journalism electives.***

c. Minimum credits required....123

News-Editorial

a. Complete the following:
- JRN F311—Magazine Article Writing 3
- JRN F323—Editing for Journalists 3
- JRN F401—Beat Reporting (or another beat course as approved by advisor) 3
- JRN F444W—Investigative Reporting....3

b. Complete two courses from the list of approved journalism electives.

c. Minimum credits required....123

Photojournalism

a. Complete the following:
- JRN F203—Basic Photography....3
- JRN F404—Photojournalism I 3
- JRN F406—Photojournalism II....3
- JRN F407—Inkjet Printing....3

b. Complete two courses from the list of approved journalism electives.

c. Minimum credits required....123

Approved journalism electives:*

- JRN F203—Basic Photography....3
- JRN F215—Radio Production 3
- JRN F220—Adobe Photoshop....3
- JRN F240—Foreign Corresponding 3
- JRN F250—Website Design....3
- JRN F251—Television Production....4
- JRN F280—Video Storytelling....3
- JRN F311W—Magazine Article Writing....3
- JRN F323—Editing for Journalists 3
- JRN F324—Typography and Publication Design 3
- JRN/THR/FLM F347O—Lighting Design....3
- JRN/WMS F380O—Women, Minorities and the Mass Media...3
- JRN F390—New Media Toolkit....3
- JRN F401—Beat Reporting....3
- JRN F402—Advanced Photography 3
- JRN F404—Photojournalism I 3
- JRN F405—Advanced Photography Seminar 3
- JRN F406—Photojournalism II....3
- JRN F407—Inkjet Printing....3
- JRN F411W—Writing for a Living....3
- JRN F440—Ethics and Reporting in the Far North....3
- JRN F444W—Investigative Reporting....3
- JRN F452—Radio and Television News Writing 3
- JRN F453O—Television News Reporting....3
- JRN F454—Advanced TV News Production 3
- JRN F456W—Science Writing for Magazines and Newspapers....3
- JRN F480—Documentary Filmmaking 3
- JRN/ART F484—Multimedia Theory and Practice....3
- JRN F493—Special Topics 3
- JRN F497—Independent Study 3

* *Students must earn a C grade (2.0) or better in each course in the major requirements and any course offered through the Department of Journalism.*

** *To assure the journalist gets a broad liberal arts education, 80 credits must be outside of journalism, 65 of which should be from traditional liberal arts courses offered by any of these departments: AKNP, ALST, ANL, ANS, ANTH, ART, ASLG, ATM, BIOL, CHEM, COMM, ECON, ENGL, ENVE, ESK, FISH, FL, FREN, FSN, GEOG, GEOS, GER, HIST, HONR, HUM, JPN, JUST, LING, LS, MATH, MSL, MUS, NORS, NRM, PHIL, PHYS, PS, PSY, RUSS, SOC, SPAN, STAT, THR, WMS.*

*** *Either JRN F471O or F472O may be used as approved JRN electives in the New Media concentration.*

Note: In order to earn a B.A. degree in journalism, at least 39 credits must be taken in upper-division (F300-level or higher) courses.

Minor*

1. Complete the following:
   - JRN F101—Introduction to Mass Communications 3
   - JRN F202—News Reporting and Writing....3
   - Approved JRN electives 9
2. Minimum credits required....15

* *Students must earn a C grade (2.0) or better in all department courses used to satisfy minor requirements.*

JUSTICE

College of Liberal Arts
Justice Program
907-474-5500
www.uaf.edu/justice/

B.A. Degree

Minimum Requirements for Degree: 120 credits

The justice discipline represents a melding of theoretical and applied concepts, and the B.A. degree in justice, as well as the M.A. degree in administration of justice, reflects that dichotomy. Consequently, students explore theoretical models associated with different aspects of the criminal justice system, but also study the structure and administration of the criminal justice system.

The applied science nature of the discipline results in graduates with a B.A. degree in justice being able to favorably compete for professional positions within various justice employment fields. This also creates opportunities for internships with various justice agencies for justice juniors and seniors.

Major — B.A. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).
3. Complete the following program (major) requirements:*
   - JUST F110—Introduction to Justice....3
   - JUST F125—Introduction to Addictive Processes....3
   - JUST F222—Research Methods....3
   - JUST F251—Criminology 3
   - JUST F300X—Ethics and Justice** 3
   - JUST F340—Rural Justice in Alaska....3
   - JUST F358—Juvenile Delinquency 3
   - JUST F460O—American Crime Control....3

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4. Complete 18 credits from the following:*
   a. Justice electives 12
   b. Six credits from the following:
      ANTH F242—Native Cultures of Alaska 3
      ANTH F320W—Language and Culture: Applications to Alaska (3)
      or COMM F330—Intercultural Communications (3) 3
      HUMS F205—Basic Principles of Group Counseling 3
      PSY F330—Social Psychology 3
      PSY F370—Drugs and Drug Dependence 3
      SOC F201—Social Problems 3
      SOC F301—Rural Sociology 3
      SOC F335—Deviance and Social Control 3
      JUST electives ..... 3 – 6
5. Minimum credits required 120

* *Students must earn a C grade (2.0) or better in each course.*

** *If taken to meet the upper-division baccalaureate core requirement for ethics/values and choices in the Perspectives on the Human Condition, then the student must take an additional upper-division justice elective for 3 credits to complete the major.*

Minor

1. Complete the following:
   JUST F110—Introduction to Justice 3
   JUST electives 12
2. Minimum credits required 15

LAW AND SOCIETY

College of Liberal Arts
Department of Political Science
907-474-7609
www.uaf.edu/polisci/

Minor only

This program helps students understand law in relationship to the larger society. It is based firmly on the view that the law is a rich humanistic tradition and study of legal ideas and institutions will promote sustained reflection on such fundamental concepts and values as equality, freedom, privacy, justice and human rights.

While the program is of special interest to students who plan graduate studies in law or careers in government service, it is recommended for any student who desires to understand the role of law in society. The program provides students with tools for reasoned appraisal of how the law works, ideas and policies that underlie it, and the ability to think clearly and analyze arguments critically.

Minor

1. Complete the following 9 credits:
   PS F303—Politics and the Judicial Process 3
   PS F435W—Constitutional Law I: Federalism 3
   PS F436W—Constitutional Law II: Civil Rights and Liberties 3
2. Complete 6 credits from the following:
   ANS F425—Federal Indian Law and Alaska Natives 3
   BA F317W—Employment Law 3
   BA F330—The Legal Environment of Business 4
   JRN F413—Mass Media Law and Regulation 3
   JUST F352—Criminal Law 3
   JUST F354—Procedural Law 3
   PS F322O—International Law and Organization 3
   PS F450—Comparative Aboriginal Rights and Policies 3
   SOC F435—Sociology of Law 3
3. Minimum credits required 15

LEADERSHIP AND CIVIC ENGAGEMENT

College of Liberal Arts
Northern Studies Program
907-474-7126
www.uaf.edu/northern/

Minor only

The minor in leadership and civic engagement is administered by the northern studies program. Its purpose is to strengthen the abilities of UAF graduates to lead and contribute effectively in both the public and private spheres, especially in the Alaska public policy context.

Minor

1. Complete the following:
   NORS F205—Leadership, Citizenship and Choice 3
   NORS F486—Senior Seminar in Leadership and Civic Engagement 3
2. Complete three courses from the following. At least one course must be a PS elective and one course must be a HIST elective.
   PS F202—Democracy and Global Society 3
   PS F263—Alaska Native Politics 3
   PS F301—American Presidency 3
   PS F315—American Political Thought 3
   PS F462—Alaska Government and Politics 3
   HIST F131—History of the United States 3
   HIST F361—Early American History 3
   HIST F364—History of the U.S. 1945 – Present 3
   RD F300W—Rural Development in a Global Perspective 3
   RD F325—Community Development Strategies 3
3. Minimum credits required 15

LINGUISTICS

College of Liberal Arts
Linguistics Program
907-474-6585
www.uaf.edu/linguist/

B.A. Degree

Minimum Requirements for Degree: 120 credits

Linguistics is the 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 undergraduate degree program seeks to give an overview of the discipline to raise students' awareness of the many aspects of that uniquely human phenomenon, language.

Major — B.A. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).
3. Complete the following program (major) requirements:*
   a. Complete the following background-related requirements:**
      Foreign or Native language (four semesters or equivalent) and a second language (two semesters).*** ..... 12 – 16
      LING F101—Nature of Language 3
   b. Complete the following:*
      ENGL F318—Modern English Grammar 3
      LING F318—Introduction to Phonetics and Phonology 3
      LING F320—Introduction to Morphology 3
      LING F430—Historical Linguistics (3)
      or LING F420—Semantics (3) 3
      LING F482—Seminar in Linguistics 3

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c. Complete six of the following:*
ANL F251—Introduction to Athabascan Linguistics 3
ANL F315—Alaska Native Languages: Eskimo-Aleut 3
ANL F316—Alaska Native Languages: Indian Languages 3
ANS F320W—Language and Culture: Applications of Alaska .. 3
ANTH/WMS F308W,O—Language and Gender 3
COMM F320—Communication and Language 3
ENGL F462—Applied English Linguistics 3
ENGL F472—History of the English Language 3
LING F410O—Theory and Methods of Second Language Teaching 3
LING F420—Semantics 3
LING F430—Historical Linguistics 3
LING F431—Field Methods in Descriptive Linguistics I 3
LING F434— Field Methods in Descriptive Linguistics II 3
LING F450O—Language, Policy and Planning 3
or other upper-division LING electives.

4. Minimum credits required 120

Minor

1. Complete the following:
LING F101—Nature of Language 3
LING F318—Introduction to Phonetics and Phonology 3
LING F320—Introduction to Morphology (3)
or ENGL F318—Modern English Grammar (3) 3
2. Complete two LING electives. **** 6
3. Minimum credits required 15

* *Students must earn a C grade (2.0) or better in each course.*
** *Where appropriate, these courses may be counted toward fulfillment of core requirements or B.A. degree requirements, but not both.*
*** *It is recommended that at least one of the languages be other than an Indo-European language.*
**** *Three of these credits may be from related courses in other departments listed in the linguistics major under 3c.*

MATHEMATICS

College of Natural Science and Mathematics
Department of Mathematics and Statistics
907-474-7332
www.dms.uaf.edu

B.A., B.S. Degrees

Minimum Requirements for Degrees: 120 credits

The number of new fields in which professional mathematicians find employment grows continually. This department prepares students for careers in industry, government and education.

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.

The department maintains a math lab which is available for assistance to all students studying mathematics at the baccalaureate level.

The Department of Mathematics and Statistics also offers programs in statistics (see separate listings).

Major — B.A. or B.S. Degree

1. Complete the following pre-major requirement:
Students must be ready to matriculate into MATH F200X before they will be allowed to declare mathematics as their major.
2. Complete the general university requirements (page 131).
3. Complete the B.A. or B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete PHYS F103X and PHYS F104X, or PHYS F211X and PHYS F212X.)
4. Complete the following program (major) requirements:*
MATH F200X—Calculus I** 4
MATH F201X—Calculus II** 4
MATH F202X—Calculus III 4
MATH F215—Introduction to Mathematical Proofs 2
MATH F314—Linear Algebra 3
MATH F401W—Introduction to Real Analysis 3
MATH F405W—Abstract Algebra 3
MATH F490O—Senior Seminar 1
5. Complete 21 additional credits of electives.* Acceptable elective courses include any MATH course at the F300-level or above, any STAT course at the F300-level or above, and CS F201. At least 15 credits must be MATH courses. [For exceptions see below.***] The following are some suggested elective packages:
a. Pure math electives:
MATH F305—Geometry 3
MATH F320—Topics in Combinatories 3
MATH F422—Introduction to Complex Analysis 3
MATH F404—Topology 3
Additional elective credits 9
b. Applied math electives:
MATH F302—Differential Equations 3
MATH F421—Applied Analysis 4
MATH F422—Introduction to Complex Analysis 3
MATH F460—Mathematical Modeling 3
Complete two of the following:
MATH F307—Discrete Mathematics 3
MATH F310—Numerical Analysis 3
STAT F300—Statistics 3
Additional elective credits 3
c. Requirements for mathematics teachers (grades 7 – 12):****
CS F201—Computer Science I 3
MATH F305—Geometry 3
MATH F306—Introduction to the History and Philosophy of Mathematics 3
STAT F300—Statistics (3)
or MATH F371—Probability
and MATH F408—Mathematical Statistics (6) ..... 3 – 6
Two courses chosen from:
MATH F302—Differential Equations (3)
MATH F320—Topics in Combinatories (3)
MATH F321—Number Theory (3)
MATH F310—Numerical Analysis (3)
MATH F460—Mathematical modeling (3) 6
Additional elective credits 3
d. Statistics concentration electives:
MATH F371—Probability 3
MATH F408—Mathematical Statistics 3
MATH F460—Mathematical Modeling 3
STAT F300—Statistics 3
STAT F401—Regression and Analysis of Variance 4
Additional elective credits 6
6. Minimum credits required 120

* *Students must earn a C grade (2.0) or better in each course.*
** *Satisfies core or B.A. or B.S. degree requirements.*
*** *In some cases, courses with strong mathematical content from other disciplines may be used as electives. Such an elective package must be approved by an advisor in the Department of Mathematics and Statistics. The requirement that at least 15 credits be math courses still applies.*
**** *We strongly recommend that prospective secondary science teachers seek advising from the UAF School of Education early in your undergraduate degree program, so that you can be appropriately advised of the state of Alaska requirements for teacher licensure. You will apply for admission to the UAF School of Education's post-baccalaureate teacher preparation program, a one-year intensive program, during your senior year. Note: All*

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mathematics majors — including double majors — must have an advisor from the Department of Mathematics and Statistics.

Note: At least 12 approved mathematics credits at the F300-level or above must be taken while in residence on the Fairbanks campus.

Minor

1. Complete the following:
   - Math F200X—Calculus I 4
   - Math F201X—Calculus II 4
   - Math F202X—Calculus III 4
   - At least 9 additional credits from MATH F215, STAT F300, any F300- or F400-level MATH course; or electives approved by a mathematics advisor 9
2. Minimum credits required 21

Note: Courses completed to satisfy this minor can be used to simultaneously satisfy other major or general distribution requirements.

MECHANICAL ENGINEERING

College of Engineering and Mines
Department of Mechanical Engineering
907-474-7136
www.uaf.edu/cem/me/

B.S., B.S./M.S. Degrees

Minimum Requirements for Degree: B.S.: 131 credits; B.S./M.S.: 151 credits

The mission of the mechanical engineering department at UAF is to offer the highest quality contemporary education at undergraduate and graduate levels, and to perform research appropriate to the technical needs of the state of Alaska, the nation and the world.

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.

The objectives of the mechanical engineering program are to produce graduates who are able to compete successfully on the world stage at the professional level; deal with the significant local, regional, national and global issues facing humankind; continue to develop as engineers through lifelong learning; and serve as resources of technical knowledge for the state as well as the nation, especially with respect to northern issues. The Engineering Accreditation Commission of ABET has accredited the B.S. degree program in mechanical engineering since 1980.

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. 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 may choose an emphasis in aerospace or petroleum engineering. Because of UAF's unique location, special emphasis is placed on cold regions engineering problems. This fact is highlighted in the technical elective, arctic engineering. Candidates for the B.S. degree in mechanical engineering are required to take the state of Alaska Fundamentals of Engineering examination in their general field.

Undergraduate students who plan to pursue graduate studies in engineering may also choose an accelerated degree for a master's in mechanical engineering. This program speeds the process and allows qualified mechanical engineering students to complete both a bachelor of science and a master of science degree in five years.

Major — B.S. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete MATH F200X, CHEM F105X and CHEM F106X.)
2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete MATH F201X, PHYS F211X and PHYS F212X.)
3. Complete the following program (major) requirements:*
   - ES F101—Introduction to Engineering 3
   - ES F201—Computer Techniques 3
   - ES F209—Statics 3
   - ES F210—Dynamics 3
   - ES F301—Engineering Analysis 3
   - ES F307—Elements of Electrical Engineering 3
   - ES F331—Mechanics of Materials 3
   - ES F341—Fluid Mechanics 4
   - ES F346—Basic Thermodynamics 3
   - ESM F450W—Economic Analysis and Operations 3
   - MATH F202X—Calculus III 4
   - MATH F302—Differential Equations 3
   - ME F302—Dynamics of Machinery 4
   - ME F308—Measurement and Instrumentation 3
   - ME F313—Mechanical Engineering Thermodynamics 3
   - ME F321—Industrial Processes 3
   - ME F334—Elements of Material Science/Engineering 3
   - ME F403—Machine Design 3
   - ME F408—Mechanical Vibrations 3
   - ME F415W—Thermal Systems Laboratory 3
   - ME F441—Heat and Mass Transfer 3
   - ME F487W,O—Design Project 3
   - ME electives** 6
   - Technical electives*** 3
   - Electives 2
4. Minimum credits required 131

* *Students must earn a C grade (2.0) or better in each of the program (major) requirements, with exception of ES F101.*

** *Mechanical engineering course at F400-level or above.*

*** *Engineering course at F400-level or above.*

Note: Students electing to complete an emphasis in aerospace engineering must complete the sequence of aerospace courses (ME F450, F451, F452 and F453) as part of their program requirements and complete a senior design project that is related to aerospace engineering.

Note: Students electing to complete an emphasis in petroleum engineering must complete the sequence of petroleum-related course (ME F409 and F416 or equivalent, plus two F400-level PETE courses) as part of their program requirements and complete a senior design project that is related to petroleum engineering.

Note: Students must plan their elective courses in consultation with their mechanical engineering faculty advisor, and obtain the advisor's approval for all elective courses.

Major — B.S./M.S. Degree

1. Complete the following admission requirements:
   a. ME major (junior preferred) or senior standing.
   b. GPA 3.25 or above (based on minimum of 24 credits in ME major requirements). Students must maintain a cumulative GPA of 3.0 to remain in the program.
   c. Submit three letters of reference.
   d. Submit GRE (general) scores.
   e. Submit a study goal statement.
   f. Submit a UAF graduate application for admission.

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2. Complete the general university requirements (page 131).
3. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete: MATH F201X, PHYS F211X and PHYS F212X.)
4. Complete the master's degree requirements (page 202).
5. Complete the following B.S. program (major) requirements:
   ES F101—Introduction to Engineering....3
   ES F201—Computer Techniques....3
   ES F209—Statics....3
   ES F210—Dynamics....3
   ES F301—Engineering Analysis....3
   ES F307—Elements of Electrical Engineering....3
   ES F331—Mechanics of Materials....3
   ES F341—Fluid Mechanics....4
   ES F346—Basic Thermodynamics....3
   ESM F450W—Economic Analysis and Operations....3
   MATH F202X—Calculus....4
   MATH F302—Differential Equations....3
   ME F302—Dynamics of Machinery....3
   ME F308—Measurement and Instrumentation....3
   ME F313—Mechanical Engineering Thermodynamics....3
   ME F321—Industrial Processes....3
   ME F334—Elements of Materials Science/Engineering....3
   ME F403—Machine Design....3
   ME F408—Mechanical Vibrations....3
   ME F415W—Thermal Systems Laboratory....3
   ME F441—Heat and Mass Transfer....3
   ME F487W/O— Design Project....3
6. Complete the following M.S. program (major) requirements:
   ME F608—Advanced Dynamics....3
   ME F631—Advanced Mechanics of Materials....3
   ME F634—Advanced Materials Engineering....3
   ME F641—Advanced Fluid Mechanics....3
   ME F642—Advanced Heat Transfer....3
7. Complete the thesis or non-thesis requirements:
   Thesis
   ME F699—Thesis....6
   Electives....9
   (Electives approved by student's advisory committee with at least 3 credits at the graduate level)
   Non-Thesis
   ME F698—Project....3
   Electives....12
   (Electives approved by student's advisory committee with at least 6 credits at the graduate level)
8. Minimum credits required for both degrees....151

Note: This degree program must be completed in seven years or the student will be disqualified from the program. If a student is disqualified for exceeding the seven year limit, a mechanical engineering B.S. degree will be awarded if: 1) course work is completed in 10 years, and 2) the student meets all ME B.S. requirements.

MILITARY SCIENCE AND LEADERSHIP

College of Liberal Arts
Department of Military Science and Leadership
907-474-7501
www.uaf.edu/rotc/

Minor only

The Army Reserve Officers' Training Program (ROTC) is America's primary program for training military officers. The Nanook Battalion 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.

Military science and leadership is an approved minor for the B.A. degree. Army instructors train students in leadership, management and decision-making through academic instruction and practical experience laboratories. These instructors impart 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.

Basic military science courses are open to all students regardless of whether or not they intend to seek an Army commission. There is no military obligation incurred by enrolling in any of the basic courses.

Students who complete the basic course and desire to pursue the program for a commission may apply for enrollment in the advanced course. A special basic camp, two-year 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 professor of military science prior to June 1 annually for information concerning the basic camp. 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. Students who wish to enroll in advanced classes but do not desire to earn a commission may do so with the approval of the department head.

There are many activities sponsored by the Nanook Battalion. The ROTC Color Guard team opens UAF hockey, basketball and other sporting and communal events. They provide a recognized trained and dedicated guard for the national colors during the national anthem and opening ceremony. The Ranger Challenge team represents the Nanook Battalion and UAF in an annual military skill-based competition in Hawaii. The Nanook Battalion has a complete set of match grade rifles and pistols for marksmanship training. Army training such as Airborne School, Air Assault School, Northern Warfare Training and Mountaineering School are also offered to students.

At an annual UAF ceremony, awards are presented for outstanding academic, athletic and leadership achievement, as well as excellence in ROTC skills.

Completion of the advanced program will lead to service in the Army as a commissioned officer. Students who compete for a commission are provided a monthly stipend. Advanced course students receive a monthly subsistence allowance during the school year. This allowance is tax free. Students enrolled in military science are furnished uniforms and texts by the department. Army ROTC scholarships are available for tuition and lab fees, and provide a book allowance in addition to the stipend. Scholarships are awarded for two, three or four years on a competitive basis. Interested students should contact the military science department for further details.

Minor

1. Complete the following:
   MILS electives*....19
2. Minimum credits required....19

* *Electives must be approved by the department.*

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MINING ENGINEERING

College of Engineering and Mines
Department of Mining and Geological Engineering
907-474-7388
www.uaf.edu/cem/min/

B.S. Degree

Minimum Requirements for Degree: 132 credits

As the nation's northernmost accredited mining engineering program, our mission is to advance and disseminate knowledge for exploration, evaluation, development and efficient production of mineral and energy resources with assurance of the health and safety of persons involved and protection of the environment, through creative teaching, research and public service with an emphasis on Alaska, the North and its diverse peoples.

The mining engineering program emphasizes engineering as it applies to the exploration and development of mineral resources and upon the economics of the business of mining. The program offers specializations in exploration, mining or mineral beneficiation.

Students are prepared for job opportunities with mining and construction companies, consulting and research firms, equipment manufacturers, investment and commodity firms in the private sector, as well as with state and federal agencies.

The mining engineering program educational objectives are to graduate competent engineers who

- are employable in the mineral and energy industries,
- can solve problems germane to Alaska, and
- are professionals and understand the need to stay technically current.

Mining engineers may aspire to, and achieve, the highest positions in the industry: operating or engineering management, government agency director or entrepreneur. Starting salaries are among the highest in the engineering profession.

Students may initiate their mining engineering program in Anchorage and transfer to Fairbanks upon completion of their freshman or sophomore year. Anchorage students intending to transfer to Fairbanks should contact faculty of the UAF mining engineering department.

Candidates for the B.S. degree in mining engineering must take the state of Alaska Fundamentals of Engineering examination. The Fundamentals of Engineering examination is a first step toward registration as a professional engineer.

The minor in mining engineering provides non-mining engineering students with an opportunity to acquire employable skills in the mining profession. Students in the mining engineering minor will be trained in a broad variety of topics such as mine ventilation, ground control, mine operation, economics, environmental law and labor management. Students will have the choice of other mining topics to make up the minor requirements.

For more information about the Mining Engineering Program mission, goals and educational objectives, visit www.uaf.edu/cem/min/about/.

Major — B.S. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: CHEM F105X, CHEM F106X, LS F101X and MATH F200X.)
2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete: MATH F201X, PHYS F211X and PHYS F212X.)
3. Complete the following program (major) requirements:*
   ES F208—Mechanics 4
   ES F307—Elements of Electrical Engineering 3
   ES F331—Mechanics of Materials 3
   ES F341—Fluid Mechanics 4
   ES F346—Basic Thermodynamics 3
   GE F261—General Geology for Engineers 3
   GEOS F262—Rocks and Minerals 3
   GEOS F332—Ore Deposits and Structure 3
   MIN F103—Introduction to Mining Engineering 1
   MIN F104—Mining Safety and Operations Lab 1
   MIN F202—Mine Surveying 3
   MIN F225—Quantitative Methods in Mining Engineering 2
   MIN F226—Introduction to Mine Development 2
   MIN F301—Mine Plant Design 3
   MIN F302—Underground Mine Environmental Engineering 3
   MIN F313—Introduction to Mineral Preparation 3
   MIN F370—Rock Mechanics 3
   MIN F407W—Mine Reclamation and Environmental Management 2
   MIN F408O—Mineral Valuation and Economics 3
   MIN F409—Operations Research and Computer Applications in Mineral Industry 3
   MIN F443—Principles and Applications of Industrial Explosives 3
   MIN F454—Underground Mining Methods 3
   MIN F482—Computer Aided Mine Design-VULCAN 3
   MIN F484—Surface Mining Methods II 2
   MIN F489W—Mining Design Project I 1
   MIN F490W—Mining Design Project II 2
   MIN F485—Mining Engineering Exit Exam 0
4. Complete the following program (major) requirements:
   MATH F202X—Calculus 4
   MATH F302—Differential Equations 3
5. Complete 3 credits* from the following recommended technical electives:**
   GE F440—Slope Stability 3
   MIN F401—Mine Site Field Trip 2
   MIN F447—Placer Mining 3
   MIN F472—Ground Control 3
   MIN F481—Computer Aided Mine Design-TECHBASE 3
   MIN F415—Coal Preparation 3
   MIN F646—Mining Engineering in the Arctic 3
   CE F603—Arctic Engineering 3
   Approved technical electives ..... 3 – 6
6. Minimum credits required 132

* *Students must earn a C grade (2.0) or better in each course.*

** *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.*

Minor

1. Complete the following:*
   MIN F103—Introduction to Mining Engineering 1
   MIN F226—Introduction to Mine Development 2
   Complete 12 MIN credits from the following:
   MIN F104—Mining Safety and Operations Lab 1
   Electives at 300- or 400-level 11-12
2. Minimum credits required 15

**Students must earn a C grade (2.0) or better in each course.*

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MUSIC

College of Liberal Arts
Department of Music
907-474-7555
www.uaf.edu/music/

B.A., B.M. Degrees

Minimum Requirements for Degrees: B.A.: 130 credits;
B.M.: 120 – 144 credits

The music curriculum is designed to satisfy cultural and professional objectives. The B.A. degree in music provides a broad, liberal education with a concentration in music. The B.M. degree in music education offers thorough preparation in teacher training with sufficient time to develop excellence in performance areas. The B.M. degree in performance offers intensive specialization for those desiring professional training in music performance.

Recitals and concerts provide students with a variety of musical experiences which expand their regular curriculum.

The music department of UAF is a full member of the National Association of Schools of Music, the national accrediting organization.

Notes for All Undergraduate Music Degrees

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 earn a minimum of 8 credits in large ensembles: MUS F101 (University Chorus), MUS F203 (Fairbanks Symphony Orchestra), MUS F205 (Wind Symphony), MUS F211 (Choir of the North). Wind and percussion instrumentalists are required to take a minimum of 4 credits in MUS F205 (Wind Symphony). Piano majors may substitute up to 2 credits of MUS F307—Piano Accompanying.

Each student (major or non-major) who enrolls in private applied lessons must be currently enrolled in a large ensemble. Requirements for students registered for class lessons vary with disciplines and are at the discretion of the instructor.

Attendance at recitals and concerts provides students with a variety of musical experiences which expand their regular curriculum; therefore, registration for MUS F190 (Recital Attendance) is mandatory until majors have passed eight semesters and minors have passed two. All applied music students enrolled in MUS F261 or higher are required to perform in at least one student recital during each semester of study.

At the end of each semester, all music majors must demonstrate a satisfactory level of proficiency of performance (Performance Juries) in their applied major in order to advance to the next level of study. A student may elect to continue study at the 200-level to prepare to pass requirements for admission to upper-division study. The performance jury at the end of the first semester of study serves as an audition for students wishing to enter a B.M. program in music education or performance. Competency levels required for each degree must be achieved in one performance area.

A piano proficiency jury examination must be successfully completed by the end of the student's second year in the program. See the Music Department Handbook for details.

Students who desire to enroll in music theory or ear training courses will complete a placement examination and be allowed to enter at their appropriate level.

Students must earn a C grade (2.0) or better in each course of their major concentration. MUS F493 is repeatable up to 6 credits. MUS F153, F307, F313, F317 are repeatable for credit. MUS F161–F162, F261–F262, F361–F362, F461–F462 are repeatable up to 6 credits.

Major — B.A. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).
3. Complete a piano placement test during the first week of classes.
4. Complete the following program (major) requirements:
   a. Complete the following:
      MUS F131 and F132—Basic Theory 4
      MUS F133 and F134—Basic Ear Training 4
      MUS F161–F362—Private Lessons (major area) 12
      MUS F190—Recital Attendance 0
      MUS F221 and F222—History of Music 6
      MUS F231 and F232—Advanced Theory 4
      MUS F233 and F234—Advanced Ear Training 2
      MUS F253—Piano Proficiency 0
      MUS F331—Form and Analysis 3
      MUS F332—Introduction to Music Technology 3
   b. Large ensembles 6
   c. Complete 6 credits from the following:
      MUS F421W—Music Before 1620 3
      MUS F422W—Music in the Seventeenth and Eighteenth Centuries 3
      MUS F423W—Music of the Nineteenth Century 3
      MUS F424W—Music in the Twentieth Century 3
      MUS F410W—Women in Music 3
5. Minimum credits required 130

Major — B.M. Degree (Performance)

1. Complete the following B.M. degree admission requirement: Audition on the major instrument.
2. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, voice performance majors must complete one year of language study. Selection of the language will be made in consultation with the voice advisor.)
3. Complete a piano placement test during the first week of classes.
4. Complete the following degree and program (major) requirements:
   a. Complete the following:
      MUS F161–F462—Private Lessons (major) 24
      MUS F131 and F132—Basic Theory 4
      MUS F133 and F134—Basic Ear Training 4
      MUS F221 and F222—History of Music 6
      MUS F231 and F232—Advanced Theory 4
      MUS F233 and F234—Advanced Ear Training 2
      MUS F331—Form and Analysis 3
      MUS F332—Introduction to Computer-based Music Technology 3
      MUS F351O—Conducting 3
      MUS F390—Junior Recital 0
      Large ensembles 8
      MUS F190—Recital Attendance 0
      MUS F490—Senior Recital 0
   b. Complete 6 credits from the following:
      MUS F431—Counterpoint 3
      MUS F432—Orchestration and Arranging 3
      MUS F433—Seminar in Musical Composition 3
      MUS F434—Advanced Harmonic Analysis 3
      MUS F435—Private Lessons in Music Composition ....2 – 4
   c. Complete 6 credits from the following:
      MUS F421W—Music Before 1620 3
      MUS F422W—Music in the Seventeenth and Eighteenth Centuries 3
      MUS F423W—Music of the Nineteenth Century 3
      MUS F424W—Music in the Twentieth Century 3

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d. Complete 9 credits from the following secondary area:*
MUS F124—Music in World Cultures 3
MUS F153—Functional Piano.....1
MUS F161–F162, F261–F262, F361–F362, F461–F462—Private Lessons (secondary performance area)..... 2 or 4
MUS F223—Alaska Native Music 3
MUS F253—Piano Proficiency 0
MUS F307—Chamber Music.....1
MUS F313—Opera Workshop.....1 – 3
MUS F317—Arctic Chamber Orchestra 1
MUS F493—Special Topics.....1 – 6

5. Minimum credits required.....123 – 124

* *Courses from 4b and 4c not already applied to program requirements may also meet this requirement.*

Major — B.M. Degree (Music Education)

Concentrations: Elementary, Secondary, K – 12

1. Complete the following B.M. degree admission requirement: Audition on the major instrument.
2. Complete the general university requirements (page 131).
3. Complete a piano placement test during the first week of classes.
4. Complete the following degree and program (major) requirements:
Large ensembles.....8
MUS F131 and F132—Basic Theory 4
MUS F133 and F134—Basic Ear Training.....4
MUS F161 – F461—Private Lessons (major) 14
MUS F190—Recital Attendance 0
MUS F221 and F222—History of Music 6
MUS F231 and F232—Advanced Theory.....4
MUS F233 and F234—Advanced Ear Training 2
MUS F253—Piano Proficiency 0
MUS F331—Form and Analysis 3
MUS F332—Introduction to Music Technology 3
MUS F351O—Conducting 3
MUS F390—Junior Recital 0
MUS F432—Orchestration and Arranging.....3
5. Complete the following education requirements:
   a. Contact the School of Education for application procedures for admission to the teacher education program.*
   b. Complete the following:
   MUED F110—Becoming a Music Teacher in the 21st Century.....2
   MUED F201—Introduction to Music Education 2
   MUED F315—Music Methods and Techniques 10
   MUED F316—Practicum in Middle School Classroom Techniques.....1
   EDSE F482—Inclusive Classrooms for All Children 3
   ANS/ED F420—Alaska Native Education (3) or ED F350—Communication in Cross-Cultural Classrooms (3).....3
   PSY F240—Lifespan Developmental Psychology.....3
   c. Complete a multicultural elective**.....3
6. Complete one of the following concentrations:

Elementary

a. Complete the following:
MUED F309—Elementary School Music Methods 3
ED F452O—Elementary Internship.....3 – 12
b. Minimum credits required.....138

Secondary

a. Complete the following:
MUED F405W—Secondary School Music Methods 3
ED F453O—Secondary Internship.....3 – 12
b. Minimum credits required.....138

K – 12

a. Complete the following:
MUED F309—Elementary School Music Methods 3
MUED F405W—Secondary School Music Methods 3
ED F454O—Student Teaching K – 12.....15
b. Minimum credits required.....144

* *Music education majors must have completed the necessary prerequisites and be admitted to the teacher education program prior to acceptance for placement in student teaching.*

** *Contact the Office of Certification and Advising (School of Education) for a list of approved courses that meet this requirement.*

Minor

1. Students must select from one of the options defined below:

Option A

a. Select twelve credits from the following courses:
MUS F103—Fundamentals of Music 3
MUS F124—Music in World Cultures 3
MUS F131—Basic Theory.....2
MUS F132—Basic Theory.....2
MUS F133—Basic Ear Training 2
MUS F134—Basic Ear Training 2
MUS F221—History of Music 3
MUS F222—History of Music 3
MUS F223—Alaska Native Music 3
MUS F231—Advanced Theory.....2
MUS F232—Advanced Theory.....2
MUS F421W—Music Before 1620.....3
MUS F422W—Music in the Seventeenth and Eighteenth Centuries.....3
MUS F423W—Music in the Nineteenth Century 3
MUS F424W—Music Since 1900 3
b. Select two credits from the following music large ensemble courses:
MUS F101—University Chorus.....1
MUS F203—Orchestra.....1
MUS F205—Wind Ensemble.....1
MUS F207—UAF Jazz Ensemble.....1
MUS F211—Choir of the North 1
MUS F319—Alaska Chamber Chorale 1
c. Select four credits from the following courses in private lessons or class lessons:
MUS F151—Class Lessons 1
MUS F161-F462—Private Lessons.....2
d. MUS F190—Recital Attendance (two semesters).....0
e. Total credits.....18

Option B

a. Select six credits from the following courses:
MUS F103—Fundamentals of Music 3
MUS F124—Music in World Cultures 3
MUS F131—Basic Theory.....2
MUS F132—Basic Theory.....2
MUS F133—Basic Ear Training 2
MUS F134—Basic Ear Training 2
MUS F221—History of Music 3
MUS F222—History of Music 3
MUS F223—Alaska Native Music 3
MUS F231—Advanced Theory.....2
MUS F232—Advanced Theory.....2
MUS F421W—Music Before 1620.....3

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MUS F422W—Music in the Seventeenth and Eighteenth Centuries....3
MUS F423W—Music in the Nineteenth Century....3
MUS F424W—Music Since 1900....3

b. Select four credits from the following music ensemble courses:
MUS F101—University Chorus....1
MUS F203—Orchestra....1
MUS F205—Wind Ensemble....1
MUS F207—UAF Jazz Band....1
MUS F211—Choir of the North....1
MUS F319—Alaska Chamber Chorale....1

c. Select eight credits from the following courses in private lessons or chamber music:
MUS F161-F362—Private Lessons....2
MUS F307—Chamber Music....1

d. MUS F190—Recital Attendance (two semesters)....0

e. Total credits....18

Note: No substitutions permitted between options. It is recommended that students contact the Music Department for advisement on appropriate course selections before selecting courses. All performance courses are subject to course enrollment studio space limitations. Large ensemble courses are available subject to currently available vacancies for different instrumental areas. Private lessons and large ensemble courses may require passing of a performance audition. Prerequisite requirements apply.

NATURAL RESOURCES MANAGEMENT

School of Natural Resources and Agricultural Sciences
907-474-7083
www.uaf.edu/snras/

B.S. Degree

Minimum Requirements for Degree: 130 credits

Natural resources management involves making and implementing decisions to develop, maintain or protect ecosystems to meet human needs and values. The core natural resources management curriculum provides students with a broad education in the various natural resources and their related applied fields. Programs can be tailored to enhance a student's depth or breadth in a given field of interest. The program is designed for students desiring careers in resources management or in other fields requiring knowledge of resources management and students planning advanced study, as well as those wishing to be better informed citizens.

The B.S. degree offers three concentrations: forestry; high latitude agriculture; and humans and the environment. The forestry concentration offers students the opportunity to focus on the multi-resource management of forests and associated ecosystems for the sustained production of goods and services and to prepare for forestry-related employment. The natural resources management/forestry program is the only accredited four-year forestry program in Alaska.

The goals of UAF's forestry program are: to produce graduates who are highly competitive in obtaining professional employment, who have the knowledge to perform well on the job and who are valued for work in Alaska and the circumpolar North; to maintain close student interaction with faculty and provide opportunities for students to obtain practical professional experience as part of their education; and to prepare students for lifelong learning and responsible participation in decision-making about the use of natural resources.

The university provides students with a foundation in the biological, social and physical sciences and a blend of classroom, laboratory and field work to develop skills for a career in forestry. The program is accredited by the Society of American Foresters (SAF).

The high latitude agriculture concentration offers opportunities for scientific study and education in areas such as field and greenhouse plant production, domestication and propagation of native plants, revegetation, domestic and native animal production, and agricultural and ecological aspects of soil science.

The humans and the environment concentration focuses on human interactions with the environment and the balancing of uses, needs and values regarding natural resources. Humans and the environment students will gain a solid foundation in the physical sciences relevant to resources management, but will be distinguished by a focus on social science coursework. Students have the opportunity to integrate international study into the degree option. Humans and the environment graduates will have skills needed to identify differing social values, understand policy and the legal foundations of resource management issues, and have knowledge of methods to develop management plans and implement decisions. Graduates will be well-positioned for a variety of careers in public resource management agencies, tribal organizations, private firms and non-profits.

Graduates of the program will have acquired a foundation in the biological, social and physical sciences and a blend of classroom, laboratory and fieldwork experience needed to develop skills for a career. The forestry program leads to a professional degree in forestry. The program is accredited by the Society of American Foresters.

State and federal agencies such as the Alaska Department of Natural Resources, Agricultural Research Service, U.S. Forest Service, Bureau of Land Management, Natural Resource Conservation Service and U.S. Fish and Wildlife Service contribute significantly to the instructional program by providing guest lecturers and internship and fieldwork opportunities for students.

Major — B.S. Degree

Concentrations: Forestry; High Latitude Agriculture; Humans and the Environment

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete a MATH—Calculus course.)
2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete STAT F200X*.)
3. Complete the following (major) requirements:*
BIOL F115X—Fundamentals of Biology I**....4
BIOL F116X—Fundamentals of Biology II**....4
BIOL F271—Principles of Ecology....4
CHEM F105X—General Chemistry***....4
CHEM F106X—General Chemistry***....4
ECON F235—Introduction to Natural Resource Economics....3
NRM F101—Natural Resources Conservation and Policy....3
NRM F106—Orientation to Natural Resource Management....1
NRM F304WO—Perspectives in Natural Resources Management....3
NRM F380W—Soils and the Environment....3
NRM F405W—Senior Thesis in Natural Resources Management I....2
NRM F406W—Senior Thesis in Natural Resources Management II....2
4. Complete one of the following concentrations:*

Forestry

a. Complete the following:
BIOL F239—Introduction to Plant Biology (4)
or NRM F211—Introduction to Applied Plant Science (3)....3 – 4
ECON F335O—Intermediate Natural Resource Economics....3
GEOS F101X—The Dynamic Earth....4
NRM F204—Public Lands Law and Policy....3
NRM F251—Silvics and Dendrology....4
NRM F290—Resource Management Issues at High Latitudes....2
NRM F338—Introduction to Geographic Information Systems....3

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NRM F340—Natural Resources Measurement and Inventory 3
NRM F365—Principles of Outdoor Recreation Management ...3
NRM F370—Introduction to Watershed Management 3
NRM F430—Resource Management Planning 3
NRM F450—Forest Management 3
NRM F440—Silviculture 3
NRM F452—Forest Health and Protection 3
NRM F453—Harvesting and Utilization of Forest Products 3
WLF F201—Wildlife Management Principles (3)
or FISH F487W,O—Fisheries Management (3).....3

b. Complete three of the following to total at least 8 credits:****
i. Complete at least one of the following non-measurements courses:
BIOL F331—Systematic Botany 4
FIRE—Any course on wildland fire control/management 3
GEOS F408—Photogeology 2
NRM F277—Introduction to Conservation Biology 3
NRM F300—Internship in Natural Resources Management*****.....1 – 6
NRM F303X—Environmental Ethics and Actions****** 3
NRM F312—Introduction to Range Management 3
WLF F201—Wildlife Management Principles (3)
or FISH F487W,O—Fisheries Management (3) 3
ii. Complete at least one of the following measurements courses:
CE F112—Elementary Surveying.....3
GEOS F422—Geoscience Applications of Remote Sensing ..3
NRM F435—GIS Analysis.....4
STAT F401—Regression and Analysis of Variance 4
STAT F402—Scientific Sampling.....3

* *Students must earn a C grade (2.0) or better in each course.*
** *Satisfies core natural science requirement.*
*** *Satisfies B.S. degree natural science requirement.*
**** *Courses other than those listed must be approved by student's advisor.*
***** *Must be forestry related.*
****** *If used to fulfill the baccalaureate core requirement for ethics/values and choices in the perspectives on the human condition, NRM F303X may not also count toward a natural resources management major. However, in this case, only two courses that total at least 5 credits are required from this list, exclusive of NRM F303X.*

High Latitude Agriculture

a. Complete the following:
BIOL F331—Systematic Botany (4)
or BIOL F310—Animal Physiology (4)
or BIOL F317—Comparative Anatomy of Vertebrates (4) 4
NRM F211—Introduction to Applied Plant Science 3
NRM F290—Resource Management Issues at High Latitudes 2
NRM F312—Range Management 3
NRM F320—Animal Science.....3
NRM F480—Soil Management for Quality Conservation (3)
or NRM F485—Soil Biology* (3) 3
or NRM F466—Environmental Soil Chemistry (3)

b. Complete at least 8 credits in biology, botany, physics, chemistry, geosciences and/or mathematics, in addition to the above basic courses. Courses must be approved for science majors.

c. Complete at least 9 credits in natural resources management electives:
any NRM course at the F200-level or above that has not been used to meet other requirements.

d. Complete at least 12 credits beyond those taken to fulfill categories above in a support field which is a group of courses selected for its clear pertinence to a cohesive program. Support fields may include but are not limited to: animal science, chemistry, communications, education, engineering, forestry, geography, marketing, natural resources management, nutrition, plant science, rural development or soils. The courses must be approved by the student's academic advisor prior to attaining senior standing.

* *The same course cannot be used to satisfy requirements in both sections a and c.*

Humans and the Environment

a. Complete the following human dimension courses:
ECON F335—Intermediate Natural Resource Economics.....3
NRM F204—Public Lands Law and Policy 3
NRM F365—Principles of Outdoor Recreation Management ...3
NRM F430—Resource Management Planning 3
NRM F465—Survey Research in Natural Resources Management 3

b. Complete at least 12 credits of resource management courses:
FISH F487W,O—Fisheries Management.....3
NRM F312—Range Management 3
NRM F340—Natural Resources Measurement and Inventory 3
NRM F370—Introduction to Watershed Management 3
NRM F410—Numerical Methods for Natural Resources Management 3
NRM F450—Forest Management.....3
NRM F463—Wilderness Management 3
NRM F480—Soil Management for Quality Conservation.....3
WLF F201—Wildlife Management Principles.....3

c. Complete at least 2 credits from the following applied experiential courses:
NRM F290—Resource Management Issues at High Latitutdes (2)
or NRM F300—Internship in Natural Resources Management and Geography (2) 2-6

d. Complete 9 credits in a skills-building single field of study: Skills building provides depth of study in fields employed in humans and the environment-related careers. Courses to be determined by students in consultation with their advisor and approval of the department head. Examples of skills building fields are: agriculture, art, aviation, business, computer application, curation, fire science, fisheries management, forestry, GIS/remote sensing, hazardous materials, language, law enforcement, statistics and wildlife management. 9

e. Complete 15 credits in breadth electives:
Electives in humans and the environment provide exposure to a breadth of topic areas relevant to understanding human interaction with the natural environment. A list of approved classes for each topic area is available from the department. 9 credits must be at the 300-level or above. Students are required to complete at least 3 credits from 3 separate topic areas in meeting the 15 credit requirement:
Alaska and Native Alaskans
Energy and Minerals
Environmental Issues
Law and Politics
Parks and Wilderness 15

5. Minimum credits required.....130

Note: Courses required for the major may also be used to satisfy the general university and B.S. degree requirements as appropriate.

Minor

1. Complete the following:
NRM F101—Natural Resources Conservation and Policy 3
NRM electives* 15

2. Minimum credits required.....18

* *At least 6 credits must be upper-division. The minor program must be approved by an NRM advisor.*

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NORTHERN STUDIES

College of Liberal Arts
907-474-7126
www.uaf.edu/northern/

B.A. Degree

Minimum Requirements for Degree: 130 credits

The northern studies program offers an interdisciplinary study of northern problems and policy issues. 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 geographic location of UAF is outstanding for the study of northern issues. Students examine the countries and regions throughout the circumpolar North and their distinctive problems, such as the survival of indigenous populations, environmental and wilderness issues, high rates of alcoholism and suicide, fragile environments, adaptation to extreme cold and cycles of light and darkness and adult development in small frontier societies.

The northern studies curriculum is centered around an interdisciplinary course (NORS F484W—Seminar in Northern Studies) which is taken in the senior year.

For information on studying at McGill University, Montreal, Canada; the University of Copenhagen, Denmark; or opportunities for study in the former U.S.S.R., see Exchange Programs and Study Abroad Programs, page 79.

Major — B.A. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).
3. Complete the following northern studies core requirements:*
   ANL F315—Alaska Native Languages: Eskimo-Aleut.....3
   ANTH F242—Native Cultures of Alaska.....3
   BIOL F104—Natural History of Alaska.....3
   GEOG F427—Polar Geography 3
   HIST F483W—20th Century Circumpolar History 3
   NORS F484W—Seminar in Northern Studies.....3
   PS F263—Alaska Native Politics (3)
   or PS F462—Alaska Government and Politics (3) 3
4. Complete 15 credits* from 2 of the following groups:**
   a. Anthropology
      ANTH F302—Ethnography of Siberia (s) 3
      ANTH F309—Circumpolar Archaeology 3
      ANTH F313—Ethnography of Alaska (s) 3
      ANS/ANTH F320W—Language and Culture: Applications to Alaska 3
      ANTH F383—Athabascan Peoples of Alaska and Adjacent Canada 3
      ANTH F472—Culture and History of the North Atlantic.....3
   b. Geography
      GEOG F302—Geography of Alaska 3
      GEOG F303—Geography of United States and Canada 3
      GEOG F306—Geography of Russia 3
   c. History
      HIST F404—Modern Scandinavia 3
      HIST F461W—History of Alaska 3
      HIST F463—Foundations of Russian History 3
      HIST F464—History of Russia 3
      HIST F481—Polar Exploration and Its Literature.....3
   d. Political Science
      PS/ANS F325—Native Self-Government 3
      PS/ANS F450—Comparative Aboriginal Rights and Policies....3
      PS F452—International Relations of the North 3
      PS F454—International Law and the Environment 3
      PS F460W—Government and Politics of Canada 3
      PS F468W—Government and Politics of Russia.....3
   e. Humanities
      ART F365—Native Art of Alaska.....3
      ART F367—Eskimo Art.....3
      ENGL F349—Narrative Art of Alaska Native Peoples (in English Translation).....3
      ENGL F350—Literature of Alaska and the Yukon Territory 3
      Northern language*** 10
5. Minimum credits required.....130

* *Students must earn a C grade (2.0) or better in each course.*

** *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.*

*** *Two semesters of a northern language, such as Eskimo or Russian.*

Minor

1. Complete the following:
   ANL F315—Alaska Native Languages: Eskimo-Aleut.....3
   ANTH F242—Native Cultures of Alaska.....3
   BIOL F104—Natural History of Alaska.....3
   GEOG F427—Polar Geography 3
   HIST F483W—20th Century Circumpolar History 3
   PS F263—Alaska Native Politics (3)
   or PS F462—Alaska Government and Politics 3
2. Minimum credits required.....18

PETROLEUM ENGINEERING

College of Engineering and Mines
Department of Petroleum Engineering
907-474-7734
www.uaf.edu/cem/pete/

B.S. Degree

Minimum Requirements for Degree: 134 credits

The mission of the petroleum engineering program is to provide its students with quality education and training in the field of petroleum engineering through effective teaching, research and public service, with emphasis on Alaska petroleum resources.

Petroleum engineering offers a unique look at the challenging problems confronting the petroleum industry. This program requires an understanding of many disciplines including mathematics, physics, chemistry, geology and engineering science. Courses in petroleum engineering deal with drilling, formation evaluation, production, reservoir engineering, computer simulation and enhanced oil recovery.

The curriculum prepares 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 UAF petroleum engineering department offers one of the most modern and challenging degree programs available.

The petroleum engineering program educational objectives are:

1. Provide students with a broad knowledge of the principles of petroleum engineering and their application.
2. Provide students with the knowledge and skills required to design and analyze petroleum engineering problems, taking into account, safety, environmental and societal impacts.
3. Provide students with the skills necessary to perform in the multi-disciplinary environment of the 21st century.

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4. Provide students with appreciation for the value of continuing professional development in maintaining their professional competence.
5. Assure that graduates from the program are well-prepared to succeed in their professional careers, whether they pursue graduate studies or enter the work force in industry, academia or government.

For more information about the Petroleum Engineering Program mission, goals and educational objectives, visit www.uaf.edu/cem/pete/about/.

Major — B.S. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: MATH F200X, CHEM F105X and F106X, and LS F101X.)
2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete: MATH F201X, PHYS F211X and F212X.)
3. Complete the following program (major) requirements:*
   - ES F201—Computer Techniques 3
   - ES F208—Mechanics 4
   - ES F331—Mechanics of Materials 3
   - ES F341—Fluid Mechanics 4
   - ES F346—Basic Thermodynamics 3
   - GE F261—General Geology for Engineers (3) or GEOS F101X—The Dynamic Earth (4) ..... 3 – 4
   - GEOS F370—Sedimentary and Structural Geology for Petroleum Engineers 4
   - PETE F103—Survey of Energy Industries 1
   - PETE F104—Fundamentals of Petroleum 1
   - PETE F205—Fundamentals of Drilling Practices 1
   - PETE F206—Introduction to Petroleum Production 1
   - PETE F301—Reservoir Rock and Fluid Properties 4
   - PETE F302—Well Logging 3
   - PETE F303W—Reservoir Rock and Fluid Properties Laboratory 1
   - PETE F407—Petroleum Production Engineering 3
   - PETE F411W—Drilling Fluids Laboratory 1
   - PETE F421—Reservoir Characterization 3
   - PETE F426—Drilling Engineering 3
   - PETE F431—Natural Gas Engineering 2
   - PETE F456—Petroleum Evaluation and Economic Decisions 3
   - PETE F466—Petroleum Recovery Methods 3
   - PETE F476—Petroleum Reservoir Engineering 3
   - PETE F478—Well Test Analysis 2
   - PETE F481W—Well Completions and Stimulation Design 3
   - PETE F487A—Petroleum Project Design** 1
   - PETE F487BW,O—Petroleum Project Design 1
   - PETE F489—Reservoir Simulation 2
   - Engineering elective*** 3
   - Technical elective**** 3
4. Complete the following program (major) requirements:
   - MATH F202X—Calculus III 4
   - MATH F302—Differential Equations 3
   - MATH F310—Numerical Analysis (3) or ES F301—Engineering Analysis 3
5. Complete the Fundamentals of Engineering Exam (as approved by the Board of Architects, Engineers and Land Surveyors).
6. Minimum credits required 134

* *Students must earn a C grade (2.0) or better in each course.*
** *PETE F487A is prerequisite for PETE F487B. Must take both courses to meet the oral communication and writing intensive requirements.*
*** *As approved by advisor (e.g. ME F416 or ES F307).*
**** *As approved by advisor (e.g. CE F603).*

PHILOSOPHY

College of Liberal Arts
Department of Philosophy and Humanities
907-474-7343
www.uaf.edu/philo/

B.A. Degree

Minimum Requirements for Degree: 130 credits

The courses in philosophy are designed to confront the student with the fundamental problems of both Western and non-Western philosophical heritages and introduce the student to independent reflection on them, thus broadening his/her perspectives for the various areas of specialization in science, the social sciences and humanities.

Major — B.A. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).
3. Complete two semester-length courses of non-English language study at the college level.*
4. Complete the following program (major) requirements:**
   a. Complete the following:
      - PHIL F102—Introduction to Philosophy 3
      - PHIL F104—Logic and Reasoning 3
      - PHIL F202—Introduction to Eastern Philosophy 3
      - PHIL F351—History of Ancient Greek Philosophy 3
      - PHIL F352—History of Modern Philosophy: Descartes to Kant 3
      - PHIL F471—Contemporary Philosophical Problems 3

   b. Complete six of the following electives:
      - PHIL F108—Science, Critical Thinking and Pseudoscience 3
      - PHIL F110—Introduction to Political Philosophy 3
      - PHIL F322X—Ethics*** 3
      - PHIL F341O—Theories of Knowledge 3
      - PHIL F342—Theories of Reality 3
      - PHIL F353—Survey of Buddhist Thought 3
      - PHIL F361—Philosophy in Literature 3
      - PHIL F362—Feminist Philosophy 3
      - PHIL F381—Topics in Logics 3
      - PHIL F402—Biomedical Ethics 3
      - PHIL F411W,O—Classical Political Theory 3
      - PHIL F412W—Modern Political Theory 3
      - PHIL F421—Aesthetics 3
      - PHIL F472—Ethics in International Affairs 3
      - PHIL F481—Philosophy of Science 3
      - PHIL F482—Comparative Philosophy and Religions 3
      - PHIL F485—Topics in Comparative Philosophies 3
      - PHIL F487—Conceptual Issues in Evolutionary Biology 3
      - PHIL F493—Special Topics 3
      - PHIL F499W—B.A. Thesis in Philosophy 3
5. Minimum credits required 130

Minor

1. Complete the following:
   - PHIL F102—Introduction to Philosophy 3
   - PHIL F351—History of Ancient Greek Philosophy 3
   - PHIL F352—History of Modern Philosophy: Descartes to Kant 3
   - PHIL elective at the F400-level 3
2. Complete two of the following:
   - PHIL F104—Logic and Reasoning 3
   - PHIL F108—Science, Critical Thinking and Pseudoscience 3
   - PHIL F110—Introduction to Political Philosophy 3
   - PHIL F202—Introduction to Eastern Philosophy 3

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PHIL F322X—Ethics*** 3
PHIL F341O—Theories of Knowledge.....3
PHIL F342—Theories of Reality.....3
PHIL F353—Survey of Buddhist Thought 3
PHIL F361—Philosophy in Literature.....3
PHIL F381—Topics in Logics.....3
PHIL F402—Biomedical Ethics.....3
PHIL/PS F411W,O—Classical Political Theory 3
PHIL/PS F412W—Modern Political Theory.....3
PHIL F421—Aesthetics 3
PHIL F472—Ethics in International Affairs 3
PHIL F481—Philosophy of Science.....3
PHIL F482—Comparative Philosophy and Religions 3
PHIL F485—Topics in Comparative Philosophies 3
PHIL F487—Conceptual Issues in Evolutionary Biology.....3

3. Minimum credits required 18

* *Non-English language may be used to meet general degree requirements.*
** *Students must earn a C grade (2.0) or better in each course.*
*** *PHIL F322X may not be counted toward a philosophy major or minor if used to fulfill core requirements.*

PHYSICS

College of Natural Science and Mathematics
Department of Physics
907-474-7339
www.uaf.edu/physics/

B.A., B.S. Degrees

Minimum Requirements for Degrees: 120 credits

The science of physics is concerned with the nature of matter and energy in all physical systems, from elementary particles to the structure and origin of the universe. Physics, together with mathematics and chemistry, provides the foundation for work in all fields of the physical sciences and engineering, and contributes greatly to other disciplines such as the biosciences and medicine.

The undergraduate curriculum provides a solid foundation in classical and modern physics, with emphasis on both its experimental and theoretical aspects. A student completing this curriculum can be well prepared for advanced study in physics and related sciences, and for other careers that also require refined abilities in problem solving.

The physics department is also responsible for the bachelor's degree programs in general science and applied physics. These programs are also described in this catalog.

Major — B.A. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).
3. Complete the following program (major) requirements:
   a. Complete the following:*
      PHYS F211X—General Physics 4
      PHYS F212X—General Physics 4
      PHYS F213X—Elementary Modern Physics.....4
      PHYS F301—Introduction to Mathematical Physics.....4
      PHYS approved electives.....20
   b. Complete the following:
      MATH F200X—Calculus I**.....4
      MATH F201X—Calculus II**.....4
      MATH F202X—Calculus III 4
      MATH electives at the F300-level or above 3
4. Minimum credits required 120

* *Students must earn a C grade (2.0) or better in each course.*
** *Satisfies core curriculum or B.A. degree requirements, but not both.*

Major — B.S. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, these courses are suggested: CHEM F105X and CHEM F106X; GEOS F101X; BIOL F115X.)
2. Complete the B.S. degree requirements (page 136).
3. Complete the following program (major) requirements:*
   PHYS F211X—General Physics 4
   PHYS F212X—General Physics 4
   PHYS F213X—Elementary Modern Physics.....4
   PHYS F220—Introduction to Computational Physics 4
   PHYS F301—Introduction to Mathematical Physics.....4
   PHYS F313—Thermodynamics and Statistical Physics.....4
   PHYS F341—Classical Physics I: Particle Mechanics.....4
   PHYS F342—Classical Physics II: Electricity and Magnetism...4
   PHYS F343—Classical Physics III: Vibration and Waves 4
   PHYS F381W,O—Physics Laboratory.....3
   PHYS F382W—Physics Laboratory.....3
   PHYS F421—Quantum Mechanics.....4
   PHYS F462—Geometrical and Physical Optics.....4
   PHYS F471—Advanced Topics in Physics I**.....3
   PHYS F472—Advanced Topics in Physics II** 3
4. Complete the following program (major) requirements:
   MATH F200X—Calculus I***.....4
   MATH F201X—Calculus II***.....4
   MATH F202X—Calculus III 4
   MATH electives at the F300-level or above****.....6
5. Minimum credits required 120

* *Students must earn a C grade (2.0) or better in each course.*
** *Students must take at least three emphasis topics from F471 and at least three application topics from F472*
*** *Satisfies core curriculum or B.S. degree requirements, but not both.*
**** *Suggested electives: MATH F314, F421 and F422.*
Note: Other courses suggested to fulfill minimum credit requirements: ES F201, F307 and F308.

Requirements for physics teachers (grades 7 – 12)

1. Complete all the requirements of the B.A. or B.S. degree.
2. All prospective physics teachers must complete the following:
   CHEM F105X and CHEM F106X—General Chemistry 8
   PHYS F211X—General Physics 4
   PHYS F212X—General Physics 4
   PHYS F213X—Elementary Modern Physics.....4
   PHYS F220—Introduction to Computational Physics 4
   PHYS F301—Introduction to Mathematical Physics.....4
   PHYS approved electives.....16
   MATH electives 3
3. All prospective science teachers must complete the following:
   PHIL F481—Philosophy of Science (3).....3

Note: We strongly recommend that prospective secondary science teachers seek advising from the UAF School of Education early in your undergraduate degree program, so that you can be appropriately advised of the state of Alaska requirements for teacher licensure. You will apply for admission to the UAF School of Education's post-baccalaureate teacher preparation program, a one-year intensive program, during your senior year.

Minor

1. Complete the following:
   PHYS F103X – F104X—College Physics (8)
   or PHYS F211X – F212X—General Physics (8) 8
2. Complete the following:
   PHYS F213X—Elementary Modern Physics.....4
   Electives at the F300 – F400-level.....8
3. Minimum credits required 20

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PHYSICS, APPLIED

College of Natural Science and Mathematics
Department of Physics
907-474-7339
www.uaf.edu/physics/

B.S. Degree

Minimum Requirements for Degree: 120 credits; 124 credits for concentration in Technical Management

The science of physics is concerned with the nature of matter and energy for all physical systems, from elementary particles to the structure and origin of the universe. Physics, together with mathematics and chemistry, provides the foundation for work in all fields of the physical sciences and engineering and contributes greatly to other fields such as the biosciences and medicine.

The field of applied physics encompasses those areas that have developed practical applications from fundamental research in physics in the last century, including space physics, plasma physics, condensed matter physics, device physics, surface physics, biophysics, laser physics and reactor physics.

The undergraduate curriculum provides a solid foundation in general physics. Students may study applied physics in one of three concentrations or may design a course of study appropriate for individual goals. Examples outside the approved concentrations could include engineering physics and biophysics. In all cases, the credits in applied physics (items "d" and "e" in each course outline) must be appropriate for the chosen subject area.

The concentration in Technical Management provides an opportunity to combine basic knowledge of physics with an aptitude for leadership in business. Declared physics majors in good standing with appropriate grades, department mentoring, and with approval for some courses are, upon graduation, welcome to apply to the M.B.A. program in UAF's School of Management. GMAT exam required.

Major — B.S. Degree with no concentration

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete MATH F200X.)
2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete MATH F201X, PHYS F211X* and PHYS F212X*.)
3. Complete the following program (major) requirements:
   a. Complete the following:
      MATH F202X—Calculus III 4
      PHYS F213X—Elementary Modern Physics* 4
      PHYS F220—Introduction to Computational Physics* 4
      PHYS F301—Introduction to Mathematical Physics* 4
      PHYS F341—Classical Physics I: Particle Mechanics* 4
      PHYS F342—Classical Physics II: Electricity and Magnetism* 4
   b. Complete mathematics credits at the F200-level or above 9
   c. Complete physics credits at the F300-level or above* 9
   d. Complete credits in applied physics*** 17
4. Minimum credits required 120

Concentrations: Atmospheric Physics, Computational Physics, Technical Management

Atmospheric Physics

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete: MATH F200X.)
2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete: MATH F201X, PHYS F211X* and PHYS F212X*.)
3. Complete the following program (major) requirements:
   a. Complete the following:
      MATH F202X—Calculus III 4
      PHYS F213X—Elementary Modern Physics* 4
      PHYS F220—Introduction to Computational Physics* 4
      PHYS F301—Introduction to Mathematical Physics* 4
      PHYS F341—Classical Physics I: Particle Mechanics* 4
      PHYS F342—Classical Physics II: Electricity and Magnetism* 4
   b. Complete mathematics credits at the F200-level or above 9
   c. Complete physics credits at the F300-level or above* ** 9
   d. Complete the following:*
      ATM F401—Introduction to Atmospheric Science 3
      ATM F413—Atmospheric Radiation 3
      ATM F445—Atmospheric Dynamics 3
   e. Complete credits in other relevant upper-division courses* ** 8
4. Minimum credits required 120

Computational Physics

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete MATH F200X.)
2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete MATH F201X, PHYS F211X* and PHYS F212X*.)
3. Complete the following program (major) requirements:
   a. Complete the following:
      MATH F202X—Calculus III 4
      PHYS F213X—Elementary Modern Physics* 4
      PHYS F220—Introduction to Computational Physics* 4
      PHYS F301—Introduction to Mathematical Physics* 4
      PHYS F341—Classical Physics I: Particle Mechanics* 4
      PHYS F342—Classical Physics II: Electricity and Magnetism* 4
   b. Complete mathematics credits at the F200-level or above 9
   c. Complete credits in applied physics* ** 12
   d. Complete the following in the concentration:*
      MATH F310—Numerical Analysis 3
      CS F201—Computer Science I 3
      CS F202—Computer Science II 3
   e. Complete credits in other relevant upper-division courses* ** 5
4. Minimum credits required 120

Technical Management

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete MATH F200X.)
2. Complete the B.S. degree requirements. (See page 136. As part of the B.S. degree requirements, complete MATH F201X, PHYS F211X* and PHYS F212X*.)
3. Complete the following program (major) requirements:
   a. Complete the following:
      MATH F202X—Calculus III 4
      PHYS F213X—Elementary Modern Physics* 4
      PHYS F220—Introduction to Computational Physics* 4
      PHYS F301—Introduction to Mathematical Physics* 4
      PHYS F341—Classical Physics I: Particle Mechanics* 4
      PHYS F342—Classical Physics II: Electricity and Magnetism* 4

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b. Complete mathematics credits at the F200-level or above, which can include courses needed for the M.B.A. program, including:
STAT F200X—Elementary Probability and Statistics or equivalent 9
c. Complete physics credits at the F300-level or above* 12
d. Complete the following in the concentration, which can be prerequisites for entrance into the UAF School of Management's M.B.A. program****.
ACCT F261, F262—Accounting Concepts and Uses.....6
BA F325—Financial Management*** 3
BA F330—The Legal Environment of Business*** 3
BA F343—Principles of Marketing*** 3
BA F360—Operations Management*** 3
BA F390—Organizational Theory and Behavior*** 3

4. Minimum credits required.....124

* *Students must earn a C grade (2.0) or better in each course.*
** *Note: These credits must be in a chosen subject area and approved before the beginning of the student's final semester by the head of the physics department.*
*** *Prerequisites are MATH F202X, STAT F200X, PHYS F220 or permission of the M.B.A. director.*
**** *Students can be required to earn a B grade or better if applying for the M.B.A. program.*
Note: Must exclude PHYS F103X and F104X from core curriculum natural science requirement.

See General Science.

POLITICAL SCIENCE

College of Liberal Arts
Department of Political Science
907-474-7609
www.uaf.edu/polisci/

B.A. Degree

Minimum Requirements for Degree: 120 credits

The Department of Political Science offers a B.A. degree as well as minors in law and society, environmental politics and political science. Graduate-level courses in political science are available through the northern studies concentration in environmental politics and policy. Doctoral study in political science is available through the interdisciplinary studies program of the Graduate School.

The study of political science provides education for citizenship in a changing nation and world. Political science provides a sound preparation in the social sciences. As the study of power, political science explains who gets what, when, where and how. It examines the struggles over claims to authority that shape our lives and our world. As the study of values, it examines why citizens obey or rebel, the nature of just societies, and the ways individuals reconcile personal liberty with political authority. As the science of political behavior, it analyzes the actions of interest groups, political parties and public officials. Politics is an omnipresent force, not only in governments but in families, social organizations, schools and decision-making bodies of all types — from student councils to international institutions. A solid understanding of local, national and international politics will benefit any student throughout his or her career.

Courses are offered in the traditional fields of international and comparative politics, American government, political theory, public policy and public law. The department also offers classes in environmental policy and politics, Native American studies, the politics of science and women's studies. In addition to course offerings and faculty expertise, the department presents real world opportunities for political science students to apply their learning. Those include numerous internship and scholarship opportunities in Alaska and the rest of the United States. Students can participate in model United Nations simulations, join the political science honor society Pi Sigma Alpha, aid faculty as research assistants and take part in numerous other department projects such as bringing speakers to campus or hosting roundtables on important issues. Graduate students may also serve as teaching assistants.

The political science B.A. has led students to graduate work in the social sciences; employment in the media and public relations; teaching at high school and university levels; and careers in business corporations and non-profits at the state and national levels. Political science provides a broad understanding of the formation, application and change of the law, as well as research techniques and standards of argumentation essential to legal practice. The study of political science also prepares students for work in various fields of government. Alaska offers job prospects for political science graduates as managers in state and local governments and as legislators and legislative staff members. Graduates are also qualified to work outside of Alaska in numerous public and private sector jobs.

Major — B.A. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete PS F100X, PS F300X and HIST F100X.)
2. Complete the B.A. degree requirements (page 136).
3. Complete the following major (program) requirements:*
PS F101—Introduction to American Government and Politics 3
PS F222—Political Science Research Methods.....3
PS F499W or PS F475 or the Alaska Universities Legislative Internship Program or other approved internship earning at least 3 transferable upper-division credits 3
4. Complete 24 credits in political science. Include at least one course from four of the following sub-disciplinary groups:*
a. Group A—American Government and Politics
PS F212—Introduction to Public Administration.....3
PS F301—American Presidency 3
PS F302—Congress and Public Policy 3
PS F401W—Political Behavior 3
PS F403W—Public Policy 3
PS F462—Alaska Government and Politics.....3
b. Group B—Public Law
PS F303—Politics and the Judicial Process 3
PS/JUST F404—Introduction to Legal Research and Writing ...3
PS F435W—Constitutional Law I: Federalism.....3
PS F436W—Constitutional Law II: Civil Rights and Liberties 3
c. Group C—Comparative Politics
PS F201—Comparative Politics.....3
PS F202—Democracy and Global Society.....3
PS F460W—Government and Politics of Canada 3
PS F464W—East Asian Governments and Politics 3
PS/HIST F467W—Political Development in Latin America and the Caribbean.....3
PS F468W—Government and Politics of Russia 3
d. Group D—International Politics
PS F321—International Politics 3
PS F322O—International Law and Organization.....3
PS F323—International Political Economy.....3
PS F437—United States Foreign Policy.....3
e. Group E—Political Theory
PS F314W—Political Ideologies.....3
PS F315—American Political Thought.....3
PS/WMS F340—Women and Politics.....3
PS/PHIL F411W,O—Classical Political Theory 3
PS/PHIL F412W—Modern Political Theory.....3

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5. Minimum credits required 120

* *Students must earn a C grade (2.0) or better in each course.*

Minor

1. Complete the following:
   PS F101—Introduction to American Government and Politics 3
   Complete at least four political science courses at the F200-, F300- or F400-level 12
2. Minimum credits required 15

PSYCHOLOGY

College of Liberal Arts
Department of Psychology
907-474-7007
www.uaf.edu/psych/

B.A., B.S. Degrees

Minimum Requirements for Degrees: 120 credits

The Department of Psychology offers B.A. and B.S. degrees in psychology. The department's focus is to provide breadth and depth in the science and profession of psychology with a commitment to honoring diversity and promoting human welfare. The curriculum develops cross-cultural knowledge, critical thinking, imagination, creativity, ethical principles and concern for social justice, as well as respect for and knowledge of diverse points of view that include feminist, multicultural, indigenous, and gay and lesbian perspectives.

In addition to active engagement in the classroom, students participate in research and community service. Programs in psychology facilitate an understanding of the human experience as an interaction of biological, psychological, social and cultural processes.

Graduates of the undergraduate program in psychology have been successful in gaining entrance to graduate school in a variety of fields including psychology, medicine, business and law. Graduation with an undergraduate psychology degree has allowed students to become employed in a variety of entry-level human services and business positions.

The Alaska Natives into Psychology (ANPsych) program helps train Alaska Natives and American Indians as psychologists or other behavioral health professionals to address the significant shortage of these professionals in Alaska, particularly rural Alaska. ANPsych supports native communities in building wellness in their villages. The ANPsych program is housed in the psychology departments at UAF and UAA and serves as a training pipeline to provide social, financial and academic support for students and behavioral health paraprofessionals who wish to continue their education. The program strives to attract Native high school and undergraduate students seeking a degree in psychology. In addition, a select group of Native students receive similar support for advanced training in psychology at the graduate level.

Major — B.A. or B.S. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.A. or B.S. degree requirements (page 136 or page 136).
3. Complete the following program (major) requirements:*
   a. Complete the following:
      PSY F101—Introduction to Psychology 3
      PSY F275—Introduction to Social Science Research Methods 3
      PSY F485—Senior Seminar 3
   b. Complete one course from each of the following specialized areas:

      Research
      PSY/SOC F250—Introductory Statistics for Behavioral Sciences 3
      PSY/SOC F480W—Qualitative Social Science Research 3
      STAT F200X—Elementary Probability and Statistics 3

      Biological Perspectives
      PSY F335—Physiological Psychology 3
      PSY F370—Drugs and Drug Dependence 3
      PSY F470—Sensation and Perception 3

      Social Perspectives
      PSY/SOC F330—Social Psychology 3
      PSY F390W,O—Industrial and Organizational Psychology 3
      PSY F445W—Community Psychology 3

      Psychological Perspectives
      PSY F304—Personality 3
      PSY F345—Abnormal Psychology 3
      PSY F440—Learning and Cognition 3

      Multicultural/Diversity
      PSY F310O—Cross-Cultural Psychology 3
      PSY/SOC F333/WMS F332—Human Sexualities Across Cultures 3
      PSY/WMS F360O—Psychology of Women Across Cultures 3
   c. Complete 12 additional PSY credits (you may also choose from the courses listed in the specialized areas above).
   d. Complete one community service course.**
4. Minimum credits required 120

* *Students must earn a C grade (2.0) or better in each course.*

** *Community service courses: PSY F310, F345, F445 and F470.*

Note: Students may not count more than 6 credits of any combination of PSY F497 and F498 toward the degree.

Note: Students may apply an unlimited number of PSY F392/F492 and PSY F393/F493 credits toward the degree provided the topics are different for each course.

Minor

1. Complete the following:
   PSY F101—Introduction to Psychology 3
   PSY electives 12
2. Minimum credits required 15

RURAL DEVELOPMENT

College of Rural and Community Development
Department of Alaska Native Studies and Rural Development
Fairbanks Campus 907-474-6528/888-574-6528 toll-free
Anchorage office 907-279-2700/800-770-9531 toll-free
Bristol Bay Campus 907-842-8316
Chukchi Campus 907-442-3400
Interior-Aleutians Campus 907-474-5439
Kuskokwim Campus 907-543-4500
Northwest Campus 907-443-2201
www.uaf.edu/danrd/

B.A. Degree

Minimum Requirements for Degree: 120 credits

Rural development degree programs are designed to educate a new generation of community leaders for rural Alaska. The B.A. degree can be earned either on the Fairbanks campus or through distance delivery.

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Students in the rural development program gain a broad understanding of Alaska's relationship to the global economy and an appreciation for sustainable development strategies. Students also learn specific tools essential for community leadership, including business plan and grant proposal writing, community visioning and planning processes, computer business applications, and project management and evaluation techniques. Graduates typically take positions with tribal and municipal governments, fisheries, tourism and other private businesses, Native corporations, regional health corporations or non-profits, and state/federal agencies.

Undergraduate degree students develop a concentration in one of five areas: community business and economic development; community research and indigenous knowledge; land, resources and environmental management; rural health and human services management; or tribal and local government administration.

Special application requirements and deadlines apply for distance B.A. degree programs. For more information contact the department toll-free at 800-770-9531 or visit our website.

Major — B.A. Degree

Concentrations: Community Business and Economic Development; Community Research and Indigenous Knowledge; Land, Resources and Environmental Management; Rural Health and Human Services Management; Tribal and Local Government Administration

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).
3. Complete the following:*
   RD F300W—Rural Development in a Global Perspective 3
   RD F325—Community Development Strategies.....3
   RD F350O—Indigenous Knowledge and Community Research.....3
   RD F351—Strategic Planning for Rural Communities.....3
   RD F352—Rural Business Planning and Proposal Development.....3
   RD F400—Rural Development Internship 3
   RD F450—Managing Rural Projects and Programs.....3
   RD F475W—Rural Development Senior Project.....3
4. Complete the following elective courses:*
   RD elective 3
   RD, ANS or ED electives.....6
5. Complete one of the following concentrations:**

Community Business and Economic Development

Complete 21 credits from the following:
ABUS F151—Village Based Entrepreneurship.....2
ABUS F179—Fundamentals of Supervision 3
ABUS F232—Contemporary Management Issues*** 3
ABUS F233—Financial Management 3
ABUS F241—Applied Business Law I.....3
ABUS F272—Small Business Planning.....3
ABUS F273—Managing a Small Business.....3
ACCT F261—Accounting Concepts and Uses I.....3
ACCT F262—Accounting Concepts and Uses II 3
ANS F310—The Alaska Native Lands Settlement 3
ANS/PS F425—Federal Indian Law and Alaska Natives 3
BA F151—Introduction to Business*** 3
CS F101—Computers and Society 3
ECON F111—Economics of Rural Alaska 3
ECON F200—Principles of Economics.....4
ENGL F212—Business, Grant and Report Writing.....3
ENGL F314W,O/2—Technical Writing 3
SOC F407O—Work and Occupations.....3
Approved electives** ..... 6 or more

Note: Designed for students interested in creating sustainable economic development for rural and indigenous communities, with a focus on small business development. Students learn to develop business and marketing plans, economic development planning and basic principles of financial and human resources management for rural enterprises. Graduates find employment in ANCSA corporations, regional development organizations, economic development agencies and as local entrepreneurs.

Community Research and Indigenous Knowledge

Complete 21 credits from the following:
ANL F315—Alaska Native Languages: Eskimo-Aleut.....3
ANL F316—Alaska Native Languages: Indian Languages 3
ANS/ANTH F320W—Language and Culture: Applications to Alaska.....3
ANS F350W,O—Cross Cultural Communication: Alaskan Perspectives 3
ANS F351—Practicum in Native Cultural Expression.....1 – 3
ANS F401—Cultural Knowledge of Native Elders*** 3
ANTH F230—The Oral Tradition: Folklore and Oral History ..3
APAR F100—Basic Video Workshop.....1
APAR F103—Editing Videotape 1
COMM F330—Intercultural Communication.....3
CS F101—Computers and Society 3
ENGL F313W—Writing Non-Fiction Prose 3
ENGL F314W,O/2—Technical Writing 3
ENGL/ANS F349—Narrative Art of Alaska Native Peoples (in English Translation).....3
HIST F250—Alaska History for Local Historians.....3
HIST F470W—Seminar in Alaskan History 3
JRN F215—Radio Production 3
JRN F311W—Magazine Article Writing.....3
JRN F404—Photojournalism I 3
JRN F452W—Radio and Television News Writing 3
LS F309—Information Resources.....1
RD F425—Cultural Impact Analysis*** 3
SOC F250—Introductory Statistics for Behavioral Sciences 3
SOC/PSY F480W—Qualitative Social Science Research.....3
Approved electives** ..... 3 or more

Note: Designed for students with interests in researching Alaska Native communities, cultures, languages, ceremonial performances and histories. Students learn principles of ethical research, explore issues of intellectual and cultural property rights, and acquire skills in doing ethnographies, oral histories, community surveys and needs assessments, and archival research. Graduates find employment with museums, ANCSA corporations, tribal governments, and federal and state agencies.

Land Resources and Environmental Management

Complete 21 credits from the following:
ABUS F223—Real Estate Law.....3
ANS F310—The Alaska Native Lands Settlement 3
ANS/PS F425—Federal Indian Law and Alaska Natives 3
BIOL F104—Natural History of Alaska.....3
BIOL F150—Introduction to Marine Biology.....3
BIOL F271—Principles of Ecology.....4
BIOL/NRM F277—Introduction to Conservation Biology.....3
CE F112—Elementary Surveying.....3
CS F101—Computers and Society 3
ECON F235—Introduction to Natural Resource Economics....3
ENGL F314W,O/2—Technical Writing 3
FISH F101—Introduction to Fisheries.....3
FISH F487W,O—Fisheries Management.....3
GEOG/NRM F338—Introduction to Geographic Information Systems 3
GEOS F101X—The Dynamic Earth 4
MIN F101—Minerals, Man and the Environment 3
MSL F111X—The Oceans 4
NRM F101—Natural Resources Conservation and Policy*** 3
NRM F204—Public Lands Law and Policy 3
NRM F340—Natural Resources Measurement and Inventory ..3

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NRM F430/F630—Resource Management Planning.....3
RD F255—Rural Alaska Land Issues*** 3
RD F265—Perspectives on Subsistence in Alaska.....3
RD F280—Resource Management Research Techniques.....3
WLF F201—Wildlife Management Principles.....3
WLF F303W—Wildlife Management Techniques.....3
Approved electives** ..... 3 or more

Note: Designed for students with an interest in land and resources co-management, development and conservation. Students learn about traditional ecological knowledge, principles of natural resources management and policy, adaptive management, and skills for effective public/private/tribal collaboration in resource management. Graduates find employment with ANCSA corporations, regional and tribal entities, state and federal agencies, and private businesses.

Rural Health and Human Services Management

Complete 21 credits from the following:
ABUS F154—Human Relations 3
ABUS F179—Fundamentals of Supervision 3
ABUS F231—Introduction to Personnel .....1 – 3
ANS/PS F425—Federal Indian Law and Alaska Natives 3
ENGL F314W,O/2—Technical Writing 3
HUMS F120—Cultural Diversity in Human Service.....3
HUMS/JUST F125—Introduction to Addictive Processes.....3
HUMS F205—Basic Principles of Group Counseling 3
HUMS F210—Crisis and Grief Counseling.....3
HUMS F215—Individual Interviewing.....2 – 3
HUMS F250—Current Issues in Human Service.....1 – 4
HUMS F301—Ethics in Human Service.....3
HUMS F305—Substance Abuse Counseling 3
JUST F340—Rural Justice in Alaska.....3
PS/ANS F325—Native Self-Government 3
PSY F240—Lifespan Developmental Psychology 3
PSY F445W—Community Psychology.....3
RHS F110—Cross-Cultural Bridging Skills 1
RHS F120—Family Systems I.....2
RHS F130—Processes of Community Change 2
RHS F140—Alaska Native Values and Principles.....1
RHS F150—Introduction to Rural Counseling 2
RHS F220—Family Systems II.....2
RHS F260—Addictions: Intervention and Treatment.....2
RHS F265—Interpersonal Violence.....2
RHS F270—Networking, Negotiating and Conflict Resolution.....2
RHS F285—Case Management.....2
RHS F290—Grief and Healing.....2
SOC F242—The Family: A Cross-Cultural Perspective 3
SOC F301—Rural Sociology.....3
PSY F370—Drugs and Drug Dependence 3
SWK F103—Introduction to Social Work.....3
SWK F320W—Rural Social Work 3
Approved electives** ..... 6 or more

Note: Designed for students interested in leadership for healthy communities, management of rural health programs and issues of community healing and wellness. Students learn principles and practices of community wellness, skills in financial and human resources management, and contemporary issues of importance in leading toward healthy communities. Graduates find employment with rural health corporations, tribal and municipal governments, educational institutions, and state and federal agencies.

Tribal and Local Government Administration

Complete 21 credits from the following:
ABUS F154—Human Relations 3
ABUS F179—Fundamentals of Supervision 3
ABUS F232—Contemporary Management Issues 3
ACCT F261—Accounting Concepts and Uses I.....3
ACCT F262—Accounting Concepts and Uses II 3
ACCT F414—Governmental and Nonprofit Accounting.....3
ANS F310—The Alaska Native Lands Settlement 3
ANS F350W,O—Cross-Cultural Communication: Alaskan Perspectives 3
ANS/PS F425—Federal Indian Law and Alaska Natives*** 3
ANS/PS F450—Comparative Aboriginal Rights and Policies....3
BA F330—The Legal Environment of Business.....4
COMM F330—Intercultural Communication.....3
COMM F335O—Organizational Communication 3
CS F101—Computers and Society 3
ECON F351—Public Finance 3
ENGL F212—Business, Grant, and Report Writing.....3
ENGL F314W,O/2—Technical Writing 3
JUST F340—Rural Justice in Alaska.....3
NRM F204—Public Lands Law and Policy 3
NRM F430/F630—Resource Management Planning.....3
PS F101—Introduction to American Government and Politics 3
PS F212—Introduction to Public Administration 3
PS F263—Alaska Native Politics*** 3
PS/ANS F325—Native Self-Government 3
PS F403W—Public Policy 3
PS F462/NORS F662—Alaska Government and Politics 3
SOC/PSY F250—Introductory Statistics for Behavioral Sciences.....3
SOC F407O—Work and Occupations.....3
Approved electives** ..... 3 or more

Note: Designed for students interested in development and operations of tribal and municipal governments in rural Alaska. Students develop an understanding of the history and constitutional basis for tribal governance, basics of federal Indian law, and principles and practices of self-determination. They develop skills in planning, budgeting, and human resources management. Graduates find employment with tribal and municipal governments and organizations, ANCSA corporations, and state and federal agencies.

6. Minimum credits required.....120

* *Students must earn a C grade (2.0) or better in each course.*
** *Elective credits may also fulfill the humanities, social science or mathematics general requirements for the B.A. degree. Prerequisites are required for many of these courses; however, prerequisites do not apply to the credit requirement.*
*** *Recommended courses. Course substitutions may be made with approval of the faculty advisor.*

Minor

1. Complete the following:
   RD F300—Rural Development in a Global Perspective 3
   RD electives at the F200-level or above.....15
2. Minimum credits required.....18

RUSSIAN STUDIES

College of Liberal Arts
Department of Foreign Languages and Literatures
907-474-7396
www.uaf.edu/language/

B.A. Degree

Minimum Requirements for Degree: 120 credits

Students majoring in Russian studies are encouraged to spend one or two semesters on an exchange program in Russia.

Major — B.A. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).

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3. Complete the following Russian studies core requirements:*
   RUSS F201—Intermediate Russian I 4
   RUSS F202—Intermediate Russian II 4
   RUSS F301W,O—Advanced Russian 3
   RUSS F302W,O—Advanced Russian 3
   RUSS F431—Studies in Russian Culture 3
   RUSS F432—Studies of Russian Literature 3
   RUSS F482—Selected Topics in Russian Literature 3

4. Complete 9 credits from the following Russian Studies electives:*
   ANTH F302—Ethnography of Siberia 3
   BA F460O—International Business 3
   ECON F463W—International Economics 3
   GEOG F306—Geography of Russia 3
   HIST F315—Europe: 1900 – 1945 3
   HIST F464—History of Russia 3
   PS F468W—Government and Politics of Russia 3

5. Minimum credits required 120

* *Students must earn a C grade (2.0) or better in each course.*

Note: BA F460 and ECON F463 are recommended for students who are planning to minor in business administration. Please contact the business administration department for prerequisites.

Minor

1. Complete the following:
   15 credits from the Russian studies core or an advisor-approved combination from the Russian studies core and Russian studies electives 15

2. Minimum credits required 15

SOCIAL WORK

College of Liberal Arts
Department of Social Work
907-474-7240
Chukchi Campus 907-442-3400
Kuskokwim Campus 907-543-4500
Northwest Campus 907-443-2201
www.uaf.edu/socwork/

B.A. Degree

Minimum Requirements for Degree: 123 credits

Graduates in social work qualify for beginning practice positions in child welfare, mental health, services for the aged, family agencies, youth programs, health services, Native corporations and other social agencies. Social work applies knowledge in the behavioral sciences to deal with the emotional and social problems of individuals, families and communities.

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.

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. A Title IV-E entitlement grant provides stipends to senior students doing practicums in child protection.

Students wishing to focus on understanding the aging process from a social work perspective and working with older adults may specialize in gerontology. Majors will take SWK F342—Human Behavior in the Social Environment II, SWK F370—Services and Support for an Aging Society, and an approved elective with gerontology content. Students minoring in social work can choose either the general social work minor or a social work minor with a specialization in gerontology.

The UAF baccalaureate social work program is accredited by the Council on Social Work Education. This degree program is delivered collaboratively within the UA system.

Major — B.A. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete SOC F100X or ANTH F100X.) (As part of the core curriculum requirements, complete BIOL F100X, F103X, F115X, F116X, F111X, or F112X.)

2. Complete the B.A. degree requirements. (See page 136. As part of the B.A. degree requirements, complete ANS/ANTH F242 and PSY F101.)

3. Compete the following program (major) requirements:*
   a. Complete the following:
      SWK F103—Introduction to Social Work 3
      SWK F220—Ethics, Values and Social Work Practice 3
      SWK F305O—Social Welfare History 3
      SWK F306—Social Welfare: Policies and Issues 3
      SWK F320W—Rural Social Work 3
      SWK F341—Human Behavior in the Social Environment I 3
      SWK F342—Human Behavior in the Social Environment II 3
      SWK F375W—Research Methods in Social Work 3
      SWK F460—Social Work Practice I 3
      SWK F461—Practicum in Social Work I** ..... 3 or 6
      SWK F463—Social Work Practice II 3
      SWK F464—Practicum in Social Work II** ..... 3 or 6
      SWK F466—Practicum in Social Work III** ..... 3 or 6
   b. Complete two courses from the following special problems areas:
      HUMS F205—Basic Principles of Group Counseling 3
      HUMS F305—Substance Abuse Counseling 3
      SWK F310—Fetal Alcohol Spectrum Disorder 3
      SWK F330—Seminar in International Social Work 3
      SWK F350W—Women's Issues in Social Welfare and Social Work Practice 3
      SWK F360—Child Abuse and Neglect 3
      SWK F370—Services and Support for an Aging Society 3
      SWK F470—Substance Abuse Theories and Treatment 3
      SWK F484—Seminar in Social Work Practice Areas 3

4. Minimum credits required 123

* *Students must earn a C grade (2.0) or better in each course.*

** *Students must complete a total of 12 credits of practicum, and students must take SWK F461 (Practicum I) and SWK F464 (Practicum II) for at least 6 of these credits. SWK F466 (Practicum III) is an option for students who have completed SWK F461 and SWK F464 for less than 12 credits.*

*** *Students wishing to specialize in gerontology should take SWK F342, SWK F370 and an approved elective from the following list:*
ANS F401—Cultural Knowledge of Native Elders
ANTH F315—Human Biology
ANTH F317—Human Growth and Development
COMM F462 —Communications in Health Contexts
SOC F310—Sociology of Aging

Minor

1. Complete the following:
   SWK F103—Introduction to Social Work 3
   SWK F220—Ethics, Values and Social Work Practice 3

2. Complete three SWK designated courses, excluding SWK F460, F461, F463 and F464 9

3. Minimum credits required 15

Minor with Specialization in Gerontology

1. Complete the following:
   SWK F103—Introduction to Social Work 3
   SWK F220—Ethics, Values and Social Work Practice 3

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SWK F342—Human Behavior in the Social Environment II 3
SWK F370—Services and Support for an Aging Society.....3

2. Choose one course from the following:
ANS F401—Cultural Knowledge of Native Elders.....3
ANTH F315—Human Biology.....3
ANTH F317—Human Growth and Development.....3
COMM F462—Communication in Health Contexts 3
SOC F310— Sociology of Aging.....3

3. Minimum credits required.....15

SOCIOLOGY

College of Liberal Arts
Department of Sociology
907-474-5494
www.uaf.edu/sociology/

B.A., B.S. Degree

Minimum Requirements for Degrees: 120 credits

Sociology is a scientific discipline that teaches us about ourselves and the groups of which we are a part. The sociological perspective equips the graduate with critical thinking and analytical problem-solving skills necessary for a variety of careers. A person with a sociology undergraduate degree can apply sociology in any work environment, including human services, government, business, community activism and public health agencies. The sociology department also prepares individuals to pursue graduate studies in sociology or professional programs for careers in law, medicine, business, education and social policy.

Major — B.A. or B.S. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.A. or B.S. degree requirements. (See page 136 and page 136. As part of the baccalaureate core requirements, complete SOC 100X.)
3. Complete the following program (major) requirements:*
SOC F201—Social Problems 3
SOC F263—Social Inequality and Stratification.....3
SOC F303—Early Sociological Thought 3
SOC F308—Race and Ethnic Relations.....3
SOC F373W—Research Methods in the Social Sciences.....3
SOC F490—Capstone Seminar.....3
4. Complete one course from the following research methods:
SOC/PSY F250—Introductory Statistics for the Behavioral Sciences.....3
STAT F200X—Elementary Probability and Statistics 3
SOC/PSY F480W—Qualitative Social Science Research.....3
5. Complete 12 credits* from the following electives:**
SOC F202—Sociology of Popular Culture 3
SOC F242—The Family: A Cross-Cultural Perspective.....3
SOC F301—Rural Sociology.....3
SOC F307O—Demography 3
SOC F309—Urban Sociology 3
SOC F310—Sociology of Aging.....3
SOC/WMS F320—Sociology of Gender 3
SOC/PSY F330—Social Psychology.....3
SOC/PSY F333/WMS F332—Human Sexualities Across Cultures.....3
SOC F335—Deviance and Social Control 3
SOC/ED F345—Sociology of Education.....3
SOC F350W—Childhood and Society 3
SOC F405O—Social Movements and Social Change 3
SOC F407O—Work and Occupations.....3
SOC F435—Sociology of Law 3
SOC F440O—Environmental Sociology 3
SOC F460—Global Issues in Sociological Perspective.....3
SOC/PSY F480W—Qualitative Social Science Research.....3
6. Minimum credits required.....120

* *Students must earn a C grade (2.0) or better in each course.*
** *Courses from this group not used toward the major may be applied toward B.A. general degree requirements where applicable.*

Minor

1. Complete the following:
SOC F201—Social Problems 3
SOC electives 15
2. Minimum credits required.....18

STATISTICS

College of Natural Science and Mathematics
Department of Mathematics and Statistics
907-474-7332
www.dms.uaf.edu

Minor Only

Minimum Requirements for Degree: 120 credits

Statistics is a collection of methods and theories 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.

Minor

1. Complete the following:
STAT F200X—Elementary Probability and Statistics (3)
or STAT F300—Statistics (3) 3
STAT F401—Regression and Analysis of Variance 4
MATH F371—Probability* 3
MATH F408—Mathematical Statistics.....3
MATH, STAT or STAT related course work** 3
2. Minimum credits required.....16

* *MATH F371 requires MATH F200X, F201X and F202X as prerequisites.*
** *e.g., BA F360, GEOS F430, ANTH F424, MATH F460, etc.*
Note: Courses completed to satisfy this minor can be used to simultaneously satisfy other major or general distribution requirements.
Note: Fisheries majors selecting the research option need only complete MATH F371 and MATH F408 in addition to their fisheries requirements to obtain a minor in statistics.

TECHNOLOGY

Office of Interdisciplinary Programs
907-474-7716

B.T. Degree

Minimum Requirements for Degree: 120 credits

This program offers qualified applicants the opportunity to expand upon their vocational/technical education.

The interdisciplinary studies B.T. degree allows exceptional students to tailor a bachelor's degree program to their unique needs. Information and advising for this degree is through the Office of the Graduate School and Interdisciplinary Programs.

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Major — B.T. Degree

1. Complete the general university requirements (page 131).
2. Complete the following B.T. degree requirements.
   ENGL F314W,O/2—Technical Writing 3
   MATH/CS/STAT elective at the F100-level.....3
   TTCH F301—Technology and Society 3
   Computer competency 3
   Specialty Electives.....6
   (Advisor approved upper-division internship or advanced technical experience.)
3. Complete 30 credits of interdisciplinary studies approved by a faculty committee.*
4. Complete 30 credits at UAF (either completed in residence or accepted by transfer as equivalent to specific UAF courses) from one of the following areas of specialization:
   a. An associate of applied science degree from an accredited institution of higher education. In general, the name of the degree shall be bachelor of technology.
   b. Substitute one of the following qualifications in an applied or technical field with the approval of the Curricular Affairs Committee of the Faculty Senate:
      - A.A.S. or similar degree earned at a non-accredited institution, deemed appropriate by the faculty.
      - State or federal certification deemed appropriate by the faculty.
      - Journeyman status in trades and industry, deemed appropriate by the faculty.
5. Minimum credits required.....120

* *Students must earn a C grade (2.0) or better in each course.*

See Interdisciplinary Studies in the degrees program section.

Note: At least 39 credits must be F300-level or above.

THEATRE

College of Liberal Arts
Department of Theatre
907-474-6590
907-474-7751 Ticket Office
907-474-7048 Fax
www.uaf.edu/theatre/

B.A. Degree

Minimum Requirements for Degrees: 120 credits

The theatre department teaches basic and advanced courses in theatre arts, technology and appreciation. The department recognizes the importance of the role of fine arts within the humanities program of a liberal arts education. Courses in theatre help develop a student's sense of self worth while encouraging independent, original and creative thinking.

Classes and productions are open to theatre majors and minors and students in other fields. These experiences provide unique opportunities for creative expression and development when coupled with other programs.

Major — B.A. Degree

Concentrations: Design/Technical Theatre, Directing, Film, Performance

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).
3. Complete the following program (major) requirements:*
   THR F101—Theatre Practicum (2)
   or THR F201—Theatre Practicum (2)
   or THR F301—Theatre Practicum (2)
   or THR F401—Theatre Practicum (2).....2
   THR F121—Fundamentals of Acting.....3
   THR F190—Audition or Portfolio Review Participation.....0
   THR F191—Audition or Portfolio Review Participation.....0
   THR F215—Dramatic Literature 3
   THR F241—Basic Stagecraft.....4
   THR F254—Costume Design and Construction I.....3
   THR F290—Audition or Portfolio Review Participation II 0
   THR F291—Audition or Portfolio Review Participation II 0
   THR F411W—Theatre History I 3
4. Complete one of the following concentrations:*

Design/Technical Theatre

   a. Complete the following:
      THR F332—Directing Theatre 3
   b. Complete one of the following:
      THR F220—Voice and Diction for the Theatre 3
      THR F221—Intermediate Acting.....3
      THR F225—Movement for the Actor.....3
      THR/FLM F310—Acting for the Camera 3
      THR/FLM F331—Directing Film/Video 3
   c. Complete a minimum of 12 credits of the following:
      THR/FLM F245—Stage and Film Production Management 3
      THR F247—Introduction to Theatrical Design.....3
      THR/FLM F271—Let's Make a Movie 3
      THR/FLM F334W—Movies and Films; Watching and Analyzing.....3
      THR F341—Intermediate Stagecraft.....3
      THR F343—Scene Design 3
      THR/FLM F347O—Lighting Design 3
      THR F348—Sound Design for the Entertainment Industry.....3
      THR F351—Makeup for Theatre.....3
      THR F355—History of Fashion and Dress.....3
      THR F413W—Playscript Analysis.....3
      THR F416W—Performance Studies Abroad 6
      THR F417—Internship in Theatre Practice.....1 – 6
      THR F447—Lighting Design II 3
      THR F456—Advanced Topics in Costume Design and Construction.....3
      THR F499—Thesis Project.....3

Directing

   a. Complete one of the following:
      THR/FLM F334W—Movies and Film 3
      THR F341—Intermediate Stagecraft.....3
      THR F343—Scene Design 3
      THR/FLM F347O—Lighting Design 3
      THR F348—Sound Design for the Entertainment Industry.....3
      THR F351—Makeup for Theatre.....3
      THR F355—History of Fashion and Dress.....3
      THR F456—Advanced Topics in Costume Design and Construction.....3
   b. Complete the following:
      THR/FLM F245—Stage and Film Production Management 3
      THR F247—Introduction to Theatrical Design.....3
      THR F332—Directing Theatre 3
      THR F413W—Playscript Analysis.....3
   c. Complete a minimum of 3 credits of the following:
      THR F220—Voice and Diction for the Theatre 3
      THR F221—Intermediate Acting.....3
      THR F225—Movement for the Actor.....3
      THR/FLM F271—Let's Make a Movie 3
      THR/FLM F310—Acting for the Camera 3

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THR F331—Directing Film/Video 3
THR F416W—Performance Studies Abroad 6
THR F417—Internship in Theatre Practice.....1 – 6
THR F410—Styles Acting.....3
THR/FLM F470—Advanced Film and Video Directing 3

Film & Multimedia

a. Complete the following:
THR/FLM F271—Let's Make a Movie 3
THR/FLM F310—Acting for the Camera 3
THR/FLM F331—Directing Film/Video 3
THR/FLM F470—Advanced Film and Video Directing 3
b. Complete two of the following:
THR/FLM F245—Stage and Film Production Management 3
THR F247—Introduction to Theatrical Design.....3
THR/FLM F334W—Movies and Films.....3
THR/FLM F347O—Lighting Design 3
THR F348—Sound Design for the Entertainment Industry.....3
THR F413W—Playscript Analysis.....3
THR F416W—Performance Studies Abroad 6
THR F417—Internship in Theatre Practice.....1 – 6
THR F499—Thesis Project.....3

Performance

a. Complete the following:
THR F220—Voice and Diction for the Theatre 3
THR F221—Intermediate Acting.....3
THR F321—Advanced Acting 3
THR F332—Directing Theatre 3
b. Complete one of the following:
THR F247—Introduction to Theatrical Design.....3
THR F341—Intermediate Stagecraft.....3
THR F343—Scene Design 3
THR/FLM F347O—Lighting Design 3
THR F348—Sound Design for the Entertainment Industry.....3
THR F351—Makeup for Theatre.....3
THR F355—History of Fashion and Dress.....3
THR F413W—Playscript Analysis.....3
c. Complete a minimum of 3 credits from the following:
THR F225—Movement for the Actor.....3
THR/FLM F271—Let's Make a Movie 3
THR/FLM F310—Acting for the Camera 3
THR F416W—Performance Studies Abroad 6
THR F417—Internship in Theatre Practice.....1 – 6
THR F410—Styles Acting.....3
THR F499—Thesis Project.....3

5. Minimum credits required.....120

Minor

1. Complete the following:
THR F121—Fundamentals of Acting.....3
THR F215—Dramatic Literature.....3
THR F241—Basic Stagecraft.....4
THR electives* 8

2. Minimum credits required.....18

* *No more than 5 credits in theatre practicum may be applied to the minor. The minor program requires the approval of a member of the theatre faculty in advance of formally declaring the minor, preferably no later than the first semester of the junior year.*

Note: Production participation requirement — Theatre, being a collaborative art, is dependent on the participation of people in all aspects of theatrical production: acting, designing, crew work, box-office, publicity, directing, etc. For this reason, students majoring or minoring in theatre are expected to participate actively and continuously in the production activities of the theatre department throughout their academic career at UAF. Theatre majors are required to take three credits of theatre practicum and are encouraged to take it for elective credits as well. Theatre majors and minors are expected to attend all theatre department "Town Meetings" and to talk regularly with a theatre department faculty member (an advisor) regarding their participation so that they may plan a working course of action to fulfill this requirement.

See Film Studies.

WILDLIFE BIOLOGY AND CONSERVATION

College of Natural Science and Mathematics
Department of Biology and Wildlife
907-474-7671
www.bw.uaf.edu

B.S. Degree

Minimum Requirements for Degree: 130 credits

The undergraduate wildlife program provides basic education and training. This degree is designed for students whose objective is to accomplish the research needed to provide additional information on wild animal populations, their habitat and habitat-animal relationships. This degree is also for students whose primary interests involve interpreting, applying or disseminating research findings, rather than their acquisition. A wildlife B.S. degree is appropriate for students contemplating careers in wildlife agency administration, in developing and implementing wildlife management plans and in public information and education. The curriculum provides a solid foundation for graduate study and meets requirement for certification by The Wildlife Society.

The geographic location of the university is particularly advantageous for the study of wildlife biology. 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 arctic tundra.

Adequate study collections of plants and animals are available, and a 2,000-acre study area is near the campus. Wildlife biology students have ample opportunity for close association with the personnel of the Alaska Cooperative Fish and Wildlife Research Unit, Institute of Arctic Biology and several local offices of the federal and state conservation agencies. These agencies often provide support for graduate student projects, and program faculty usually hire a number of students for summer fieldwork. Thus, an unusually good opportunity is available for students to gain experience and to make job connections.

Major — B.S. Degree

1. Complete the general university requirements. (See page 131. As part of the core curriculum requirements, complete COMM F141X.)
2. Complete the B.S. degree requirements (page 136).
3. Complete the following program (major) requirements:*
a. Complete the following:
BIOL F115X—Fundamentals of Biology I*** 4
BIOL F116X—Fundamentals of Biology II***.....4
BIOL F239—Introduction to Plant Biology.....4
BIOL F271—Principles of Ecology.....4
BIOL F310—Animal Physiology 4
BIOL F317—Comparative Anatomy of Vertebrates 4
BIOL F331—Systematic Botany.....4
BIOL F362—Principles of Genetics.....4
BIOL F425—Mammalogy.....3
BIOL F426W,O/2—Ornithology.....3
ENGL F314W,O/2—Technical Writing (3)
or ENGL F414W—Research Writing (3).....3
NRM F101—Natural Resources Conservation and Policy 3

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NRM F204—Public Lands Law and Policy (3)
or NRM F407—Environmental Law (3) 3
WLF F101—Survey of Wildlife Science 1
WLF F201—Wildlife Management Principles 3
WLF F303W—Wildlife Management Techniques 3
WLF F410—Wildlife Populations and Their Management 3
WLF F460—Wildlife Nutrition 4

b. Complete at least one of the following:
BIOL F471—Population Ecology 3
WLF F433—Conservation Genetics 3
WLF F469O—Landscape Ecology and Wildlife Habitat 3

c. Complete the following:
CHEM F105X—General Chemistry** 4
CHEM F106X—General Chemistry** 4
MATH F200X—Calculus (4)**
or MATH F272X—Calculus for Life Sciences (3)** ..... 3 – 4
PHYS F103X—College Physics 4
STAT F200X—Elementary Probability and Statistics (3)***
or STAT F300—Statistics (3)*** 3
STAT F401—Regression and Analysis of Variance*** 4

d. Complete three of the following:
BIOL F303—Principles of Metabolism and Biochemistry 4
BIOL F406—Entomology 4
BIOL F427—Ichthyology 3
BIOL F441W,O/2—Animal Behavior 3
BIOL F472W—Community Ecology 3
BIOL F473W—Limnology 4
BIOL F474—Plant Ecology 4
BIOL F481—Principles of Evolution 3
NRM F312—Introduction to Range Management 3
NRM F338—Introduction to Geographic Information Systems 3
NRM F435—GIS Analysis 4
NRM F370—Introduction to Watershed Management 3
NRM F380W—Soils and the Environment 3
NRM F450—Forest Management 3
WLF F305—Wildlife Diseases 3
WLF F419O/2—Waterfowl and Wetlands Ecology and Management 4

4. Complete electives

5. Minimum credits required 130

* *Students must earn a C grade (2.0) or better in each course.*
** *Satisfies a core requirement.*
*** *Satisfies a B.S. degree requirement.*

Note: B.S. degree 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.

Requirements for biology teachers (grades 7 – 12):*

1. Complete all the requirements of the wildlife biology B.S. degree.

2. All prospective biology teachers must complete the following:
BIOL F342—Microbiology 4
BIOL F481—Principles of Evolution 4
BIOL F303—Principles of Metabolism and Biochemistry (4) or CHEM F321 and CHEM F322—Organic Chemistry (6) .... 4 – 6

3. All prospective science teachers must complete the following:
PHIL F481—Philosophy of Science (3) 3

* *We strongly recommend that prospective secondary science teachers seek advising from the UAF School of Education early in your undergraduate degree program, so that you can be appropriately advised of the state of Alaska requirements for teacher licensure. You will apply for admission to the UAF School of Education's post-baccalaureate teacher preparation program, a one-year intensive program, during your senior year. Above requirements apply to all candidates who apply to the UAF School of Education Spring 2006 or later, for licensure in biology.*

Minor*

1. Complete the following:
WLF F303W—Wildlife Management Techniques 3
WLF F410—Wildlife Populations and Their Management 3
WLF F460—Wildlife Nutrition 4
Approved BIOL and WLF electives* 6

2. Minimum credits required 15

* *Only biology or wildlife electives that are not required for the student's major.*

Note: Prerequisites for required courses include BIOL F115X-F116X, BIOL F271, BIOL F310, STAT F200X or F300, and WLF F201. Depending upon a student's major, some of these prerequisites may satisfy the 6 elective credits in biology and wildlife required for this minor.

WOMEN'S AND GENDER STUDIES

College of Liberal Arts
907-474-6249
www.uaf.edu/women/

Minor only

Women's and gender studies offers an interdisciplinary minor focusing on women, girls, and historical and contemporary experiences related to femaleness. In addition, the minor offers students the opportunity to study multiple issues related to gender, such as masculinities, femininities and sexualities. In addition to an introductory course and a theory course focusing on women's studies, the minor draws from a variety of other disciplines, including: Alaska Native studies, anthropology, communication, education, English, foreign languages, history, journalism, justice, linguistics, literature, music, philosophy, political science, psychology, social work and sociology. The particular strength of the program lies in its interdisciplinarity, its wide diversity of course offerings and its inquiry into gender issues. The multiple voices and perspectives provide broad understanding of diverse issues related to both women and gender. The minor helps students prepare for a wide variety of personal and career pursuits as gender issues and women are involved in every aspect of human experience.

Minor

1. Complete the following:
WMS F201—Introduction to Women's and Gender Studies 3

2. Complete at least 12 additional credits from courses cross-listed with WMS [and that are from two or more disciplines,] subject to the approval of a Women's Studies advisor. 12

3. Minimum credits required 15

YUP'IK LANGUAGE AND CULTURE

College of Liberal Arts
Department of Alaska Native Languages
907-543-4500 or 907-474-7874
www.uaf.edu/anlc/classes/
Program available at Kuskokwim Campus only

B.A. Degree

Minimum Requirements for Degree: 120 credits

The Yup'ik language and culture, or Yupiit Nakmiin Qaneryaraat Piciryaraat-llu, program strives to reinforce a Yup'ik identity that is centrally dependent on the language and culture, prepares the student for success in the world, and leads to acceptance at home. The program is based on the philosophy that a strong command of the

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Yup'ik language leads to a complete understanding of the Yup'ik way of life, the world around us, and our place in it.

Depending on interest, students in the program are encouraged to complete a minor in education or Alaska Native and rural development.

Major — B.A. Degree

1. Complete the general university requirements (page 131).
2. Complete the B.A. degree requirements (page 136).
3. Complete the following program (major) requirements.*
   a. Complete one of the following sequences:
      ESK F221—Intermediate CY Apprenticeship 1.....3
      ESK F222—Intermediate CY Apprenticeship 2.....3
      ESK F223—Intermediate CY Apprenticeship 3.....3
      or
      ESK F204—Conversational Central Yup'ik IV 3
      ESK F205—Regaining Fluency in Yup'ik 3
      ESK F206—Regaining Fluency in Yup'ik 3
      or
      ESK F240—Introduction to Reading Yup'ik.....3
      ESK F250—Yup'ik Literature for Children.....3
      ESK F251—Teaching Yup'ik Reading and Writing.....3
   b. Complete the following:
      ESK F130—Beginning Yup'ik Grammar.....3
      ESK F208—Yup'ik Composition.....3
      ESK F375 O—Yup'ik Philosophy and Spirituality (Umyuarteqsaraq).....3
      ESK F330 W—Central Yup'ik Literature (Yupiit Quliraitnek Igaryaraq).....3
      ESK F488 W—Documenting Cultural and Oral Traditions (Caliarkaq).....3
   c. Complete two of the following:
      ANL F287—Teaching Methods for Alaska Native Languages...3
      ANL F288—Curriculum and Materials Development for Alaska Native Languages.....3
      ANS F111—History of Alaska Natives 3
      ANS/ANTH F242—Native Cultures of Alaska 3
      ANS/ANTH F320—Language and Culture.....3
      ESK F230 —Introduction to Interpreting and Translating.....3
      ESK F231—Introduction to Interpreting and Translating II 3
      ESK F240—Introduction to Reading Yup'ik.....3
      ESK F250—Yup'ik Literature for Children.....3
      ESK F251—Teaching Yup'ik Reading and Writing.....3
      LING F402—Second Language Acquisition.....3
      LING F410—Theory and Methods of Language Teaching.....3
      LING F450O—Language Policy and Planning.....3
4. Minimum credits required.....120

* *Students must earn a C grade (2.0) or better in each course.*

Pre-Professional Opportunities

UAF students may develop a program of study that prepares them for a variety of professional or graduate programs. Pre-professional advising provides information about groundwork for admission to a specific graduate program or professional school. Most professional schools do not require a specific major for admission to their program. However, many courses may be required before admittance into the program, so a student must research admissions requirements carefully.

The Academic Advising Center provides academic advising for all pre-professional areas. The Biology and Wildlife Department and the Chemistry Department provide additional academic advising for the medical, dental, pharmacy, veterinary and allied health pre-professional programs. The Justice Department provides academic advising for law pre-professional programs.

Descriptions of each of the following professions and some information about required undergraduate coursework are at www.uaf.edu/advising/preprof/. Contact the Academic Advising Center at 907-474-6396 or uaf.advising@alaska.edu for more information.

- Architecture
- Chiropractic
- Dentistry
- Law
- Library Science
- Medicine (allopathic and osteopathic)
- Museum Studies
- Occupational Therapy
- Optometry
- Pharmacy
- Physical Therapy
- Physician Assistant
- Podiatry
- Veterinary Medicine

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Graduate Degrees

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UAF graduate students James Smaby and Kathryn Hendrickson practice a duet at Ballaine Lake.

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How to Earn a Graduate Degree

General university and specific degree requirements for UAF graduate programs are described in this section of the catalog, along with requirements for each graduate program. You'll find instructions for applying for admission beginning on page 29.

Academics, Policies and Regulations

Many academic policies and regulations apply to both graduate and undergraduate students. These guidelines are relevant to your academic experience at UAF and important for you to read and understand. Topics include definitions and requirements for official university communications, full- and part-time student status, academic progress, academic dismissal, grading system and policies, FERPA and the student code of conduct. See page 46 for descriptions of UAF academics, policies and regulations.

General University Requirements

- **Catalog and Time Limit**
  You may elect to graduate under the degree requirements in effect the first semester of your enrollment in your graduate degree program or under the catalog in effect when you graduate. However, if you do not meet continuous registration requirements, you waive the right to use the catalog in effect when you first entered your graduate program; you will use either the catalog in effect during the semester of your re-entry or the catalog in effect when you graduate.

  All non-academic policies and regulations listed in the current catalog apply, regardless of the catalog you are using for your degree requirements. You must satisfactorily complete all course work listed on your Advancement to Candidacy form and all other degree requirements within seven years for a master's degree and 10 years for a Ph.D.
- **Grades and Grade Point Average (GPA)**
  You must have a cumulative GPA of 3.0 in the courses identified on your Advancement to Candidacy form to remain in good standing and to graduate. In addition, for the purpose of satisfying degree requirements, you must earn a B (3.0) or better (no P grades) in each F400-level course and a C grade (2.0) or better in each F600-level course. NOTE: A B- is less than a 3.0 and, if obtained in an F400 course, will not count for meeting degree requirements; likewise, a C- is less than a 2.0 and, if obtained in a F600-level course, will not count for meeting degree requirements.
- **Registration Requirement**
  Graduate students must be registered for at least 6 credits per year (fall, spring, summer), in graduate or F400-level courses relevant to the graduate degree, while actively working toward a degree. Those who wish to temporarily suspend their studies should obtain an approved leave of absence.

  You must be registered for at least 3 graduate credits in the semester in which you receive your degree and you must apply for graduation in that semester.
- **Temporary Leave of Absence**
  If you need to temporarily suspend studies while earning a graduate degree, you must obtain an approved leave of absence. If you fail to register for at least 6 graduate or F400-level credits in a school year (fall, spring or summer semester) or to obtain a leave of absence, you will be dropped from graduate study and will have to be reinstated before resuming graduate studies. Contact the Graduate School for information at 907-474-7464.
- **Transfer Credit**
  Up to one-half of all graduate degree credits approved for a graduate program may be transferred from UAA and UAS. No more than one-third of approved program credits may be transferred from other accredited institutions outside the UA system. Transferred credits may not be used from a previously earned degree. A minimum B grade (3.0) is required in all graduate courses presented for transfer.
- **Credits Earned While Non-Degree Seeking**
  A student who earned post-baccalaureate degree credits while studying as a non-degree student at UAF may, with approval of the graduate advisory committee, apply those credits toward a graduate degree. However, no more than one-half of all credits used to meet the requirements of a graduate degree may be credits earned as a non-degree student.
- **Course Restrictions**
  You may not use credit by examination, audited courses, F100-, F200-, F300-, and F500-level courses, or courses taken under the credit/no credit option to fulfill the basic course requirements of any degree program. No more than 12 credits of special topics courses (F693 or F695) or individual study (F697) may be used toward a graduate degree. The dean of the Graduate School must approve requests for exceptions to the limit.
- **Deficiencies**
  Your advisory committee may require that you remedy certain deficiencies in your program. Your committee will determine early in the program both how to remedy the deficiencies and the minimum level of performance

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required of you. Graded undergraduate courses taken to remedy a deficiency must receive a grade of B (3.0) or better. Deficiency courses are not listed on the Advancement to Candidacy form.

- **English Proficiency**
  You must be proficient in written and oral English. Your advisory committee will determine requirements to remove any such deficiencies. These requirements may not be used to fulfill the language/research tool requirement of some departments.
- **Cooperative Programs**
  Some students may develop cooperative programs using specific courses from other universities before being admitted to graduate study at UAF. As part of the application process, the cooperative program must be included in an approved Graduate Study Plan (GSP). The student must complete a minimum of 12 semester credits in residence at UAF, in addition to thesis and research.

    The following guidelines are for collaborative Ph.D. graduate studies across all UA academic units. Some individual degree programs have different requirements which are included in specific program descriptions in the graduate degree program section of the catalog. The guidelines described here apply only to programs that have not established different requirements.

    1. At least four faculty members shall serve on the graduate advisory committee for each Ph.D. student. At least two committee members shall be UAF faculty. One of the UAF committee members must be on a tenure-track appointment in a Ph.D.-granting department. The committee shall be chaired or co-chaired by a UAF faculty member.
    2. The graduate advisory committee and its chair and/or co-chairs must be approved by the program director and the dean of the Graduate School.
    3. UAF rules and regulations on graduate studies shall apply to all UAF graduate students, including those concurrently enrolled at UAA and UAS.
    4. The graduate advisory committee must meet at least once a year to update the Graduate Study Plan and to review the student's progress toward the degree. The annual progress report must be signed by all committee members and submitted to the dean of the UAF Graduate School.
    5. A comprehensive exam committee composed of the student's advisory committee will administer the Ph.D. comprehensive exam for each student.
    6. The Ph.D. thesis defense is to be conducted on the UAF campus.

GRADUATE ADVISORY COMMITTEE

A graduate advisory committee is normally appointed within the first semester of study to guide students in developing and completing their degree programs. Committee members for graduate degrees are approved by the appropriate dean, usually upon recommendation of the department head, and by the dean of the Graduate School. Advisory committees for interdisciplinary students are approved by the dean of the Graduate School. Each interdisciplinary student follows procedures through the department of his or her advisory committee chair. The committee chair's department will be the "home" of the interdisciplinary student for academic purposes.

The graduate advisory committee's major responsibilities are to formulate a Graduate Study Plan, in consultation with the student, by the end of the student's second semester in the graduate program; to develop a tentative timetable for completion of all requirements for the degree program; to monitor the student's progress in course work and research; to provide advice and feedback to the student on that progress; to file an Annual Report of Graduate Student Advisory Committee with the Graduate School; to approve, where appropriate, a research topic; to supervise the preparation of the research thesis or project when one is required; to uphold the standards of the college/school and the university; to inform the dean, in writing, if a student's performance is inadequate and provide relevant recommendations; and to formulate and conduct the comprehensive examination and other exams as required by the department. The student's advisor (major professor, advisory committee chair) acts as head of the graduate advisory committee and takes the lead in fulfilling these responsibilities.

- **Master's Degree**
  The core advisory committee of master's degree students must consist of three approved UAF faculty members. Participating faculty above this number are considered additional committee members. Committee membership must be approved by the home department, unit dean and the dean of the Graduate School.

    Retired or emeritus UAF faculty who have an association with the home department may serve on master's advisory committees, upon expressed approval by the home department.

    Faculty from other universities and other professionals who are not employed by UAF may serve as either core or additional committee members on master's advisory committees, upon expressed approval by the home department. They may not serve as the chair of an advisory committee, but may serve as co-chair.
- **Doctoral Degree**
  The core advisory committee of doctoral degree students must consist of four approved UAF faculty members (all must have a Ph.D. or equivalent). For interdisciplinary students, one advisory committee member must be from a Ph.D.-granting department or be approved as the graduate school representative by the graduate school dean, based on prior experience advising Ph.D. students. Participating faculty above this number are considered additional committee members. Committee membership must be approved by the home department, unit dean and the dean of the Graduate School.

    Retired or emeritus UAF faculty who have an association with the home department may serve on

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doctoral advisory committees, upon expressed approval by the home department.

Faculty from other universities and other professionals who are not employed by UAF may serve as either core or additional committee members on doctoral advisory committees (all must have a Ph.D. or equivalent), upon expressed approval by the home department. They may not serve as the chair of an advisory committee, but may serve as co-chair.

GRADUATE STUDY PLAN

Graduate students must file a Graduate Study Plan (GSP) with the Graduate School before the end of their second semester in a UAF graduate degree program. The GSP outlines the curriculum of study and a timetable the student must follow in meeting graduate degree requirements. The GSP is prepared by the advisory committee in consultation with the student. It is an agreement of mutual expectations between the student and the faculty committee. The GSP not only contains the specific degree requirements but also indicates the mechanism for fulfilling these requirements (e.g., via course work, examinations, readings, internships or other supervised experience) and a projected timetable.

CHANGING PROGRAMS

Graduate students may change their program only when the areas of emphasis or the degree are within the same department (e.g., from an M.A. in anthropology to a Ph.D. in anthropology, or from a Ph.D. in Biochemistry and molecular biology to a Ph.D. in environmental chemistry). If the change meets those requirements, you may change programs by completing a change of major form, available from the Graduate School's website. Regardless of when you submit the form, a change of program doesn't become effective until the beginning of the upcoming fall or spring semester. If, however, you want to change to a program in a different department, school or college (e.g., from an M.S. in civil engineering to an M.S. in biology), you must submit a new application for admission so faculty in the new degree program may fully review your credentials. For more information, contact the Graduate School at 907-474-7464.

ADVANCEMENT TO CANDIDACY

Advancement to candidacy formally establishes your specific degree requirements and should be done as soon as possible after qualifying. At the latest, you should submit your application for advancement to candidacy one semester before you are awarded your degree.

The finalized Graduate Study Plan should be the basis for completing the Advancement to Candidacy form. Students must have a cumulative GPA of 3.0 in the courses identified on the Advancement to Candidacy form. For the purpose of satisfying degree requirements students must earn a B (3.0) or better (no P grades) in each F400-level course and a C grade (2.0) or better in each 600 level course. A B- is less than a 3.0 and, if obtained in a F400 course, will not count for meeting degree requirements; likewise a C- is less than a 2.0, and if obtained in an F600-level course, will not count for meeting degree requirements.

Admission to graduate study does not imply advancement to candidacy for a degree. The graduate advisory committee has the option of refusing to recommend a student to candidacy.

- **Master's Degree**
  You may apply for advancement to candidacy for a specific master's degree if you are in good standing and you have:
  1. Satisfactorily completed at least 9 semester credits of graduate study at UAF (study after admission to a specific degree program).
  2. Received approval of a provisional thesis or project topic.
  3. Received approval of the finalized Graduate Study Plan, including specific course work to be completed and any other requirements.
- **Doctoral Degree**
  You may apply for advancement to candidacy for the Ph.D. degree if you are in good standing and you have:
  1. Completed the full time equivalent of two academic years of graduate study.
  2. Completed at least 9 UAF credits.
  3. Received approval of the Graduate Study Plan.
  4. Obtained approval of the advisory committee for the title and synopsis of the thesis.
  5. Passed a written comprehensive examination.

EXAMINATIONS

Examinations are given in both written and oral form, depending upon the policy of the program unit, the decision of the advisory committee and the specific examination being taken.

- **Placement Examinations**
  Some programs have formalized placement exams designed to pinpoint a student's strengths and weaknesses as an aid in developing the Graduate Study Plan. This evaluation is carried out during the student's first semester at the university, preferably in the first month, and may be written, oral or both.
- **Qualifying Examinations**
  A few master's degree programs require the student to complete a written and/or oral qualifying examination before advancement to candidacy. This examination is an interim evaluation of academic progress; the student may pass unconditionally or conditionally. A conditional pass indicates specific weaknesses that the student must remedy before degree requirements are completed. The Graduate Study Plan and later the Advancement to Candidacy form should include mechanisms for addressing these weaknesses.
- **Comprehensive Examination**
  The comprehensive examination is given to determine whether the student has integrated knowledge and understanding of the principles and concepts underlying major and related fields. It may be oral or written or a

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combination of both. Ph.D. degree students normally take a written comprehensive examination within two academic years of entering the program, but no later than two academic years before the expected completion of the degree (whichever is earliest). The Ph.D. student's advisory committee may choose to give an oral examination to supplement the written comprehensive examination. Each Ph.D. student must pass the comprehensive examination prior to advancement to candidacy.

- **Defense of Project**
  Graduate Students who are required to complete a project in partial fulfillment of degree requirements must pass an oral defense of project examination. The defense will consist of a presentation followed by questions on the research, analysis and written presentation. All committee members must be present at the project defense.
- **Defense of Thesis Examination**
  Graduate students who are required to complete a thesis in partial fulfillment of degree requirements must pass an oral defense of thesis examination. The defense will consist of a presentation followed by questions on the research, analysis and written presentation. The Graduate School will not accept a thesis for final submission until the student has successfully defended it. The Ph.D. thesis defense is to be conducted on the UAF campus. All committee members must be present for the defense of thesis.
- **Examination Committee**
  In most cases, the student's graduate advisory committee prepares and gives the examinations under guidelines formulated by the faculty of the department in which the degree is being taken. In a few programs, examinations are replaced or supplemented by departmental or school examinations and administered by an established examining committee.
- **Outside Examiner**
  An outside examiner representing and appointed by the dean of the Graduate School is required at all Ph.D. oral examinations (except the placement examination). The examiner must be from a different department than the student and the chair of the advisory committee. The outside examiner is present to determine that a stringent, unbiased examination is fairly administered and evaluated.
- **Language/Research Tool Requirement**
  Proficiency in a second language or a research tool is not a university requirement, but some departments or programs may make this requirement. An advisory committee may specify a language or research tool if its requirements exceed those of the program.

  The specific language or research tool is determined by the advisory committee, guided by policies of the administrative unit in which the degree is offered. Generally, competency in a second language is required. However, upon approval of the department or program head, the committee may substitute computer languages, statistics, mathematics, or study in areas such as history or philosophy of science, business, administration, law, or economics. In all instances, topics selected must support the student's degree program.

GRADUATION

- **Responsibility**
  You are responsible for meeting all requirements for graduation.
- **Application for Graduation**
  You must be registered for at least 3 graduate credits in the semester in which you receive your degree. You must file an application for graduation and a non-refundable fee with the Registrar's Office. We encourage you to apply for graduation in the semester prior to the semester you plan to graduate. Applications for graduation filed after the published deadline will be processed for graduation the following semester. You need not have all requirements met before you apply for graduation. The application is an indication that you are planning to finish all degree requirements during the intended graduation semester. Students who apply for graduation and who do not complete degree requirements by the end of the semester must reapply for graduation and pay the fee again.
- **Diplomas and Commencement**
  UAF issues diplomas to graduates three times each year: in September, January and June. All students who complete degree requirements during the academic year are invited to participate in the annual commencement ceremony at the end of spring semester. Names of students receiving degrees appear in the commencement program and are released to the media unless the student has a confidential hold on file with the Office of the Admissions and the Registrar. Students who do not want their names to be released may so indicate on the application for graduation form. Graduates are responsible for ordering caps and gowns through the UAF bookstore in early spring.

Graduate Assistantships

Graduate assistants receive stipends for either a semester or the academic year. Graduate assistants can be paid for a maximum of 20 hours per week while school is in session. Students with assistantships must be registered for at least 9 credits during both the fall and spring semesters (audited credits are not eligible).

Any exceptions to the 20-hour per week rule must be approved by the student's committee chair, department head, college dean and dean of the Graduate School. Complete a Student Employee Waiver Form (available at www.alaska.edu/hr/forms/int_personnelforms/) to request approval of more than 20 student work hours per week. Foreign nationals on temporary student visas are not permitted to work

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more than 20 hours a week while classes are in session and are not eligible for an overload waiver.

Teaching assistantships include a tuition payment by the university for no more than 10 credits each semester if the workload is 15 to 20 hours per week. If the workload is 10 to 14 hours per week, no more than 5 credits will be included. No tuition will be included if the workload is less than 10 hours per week.

Research assistantships include a tuition payment by grants/contracts for no more than 10 credits during each semester if the workload is 15 to 20 hours per week. If the workload is 10 to 14 hours per week, no more than 5 credits will be included. No tuition will be included if the workload is less than 10 hours per week.

Tuition payments must be used for courses directly related to the student's degree program. All fees are the responsibility of the student unless the department or institute makes other arrangements with the UAF Graduate School prior to registration.

A graduate student with a GPA of less than 3.0 for one semester will be allowed to petition to continue as a graduate assistant for the next semester, but only once. The petition by the student must be approved by the student's advisory committee chair, department head, college dean and dean of the Graduate School.

Graduate Certificates

Graduate certificate programs are designed to provide education past the baccalaureate level and/or to meet clearly defined educational needs of students who have already completed a master's degree. Completion of a graduate certificate should prepare students to better accomplish their goals or meet employment criteria.

These programs typically require between 12 and 15 credits and provide the student with formal recognition of mastery of a clearly defined academic topic. The credit hours may be applied to other graduate programs where applicable.

Requirements for Graduate Certificates

In order to earn a graduate certificate, students must be admitted to the program and complete the requirements listed in the program section of this chapter. Most graduate certificates are between 12-18 credits. You must have a cumulative GPA of at least 3.0 in all course work and be registered in the semester you plan to graduate.

Students may elect to complete their program under the requirements of the catalog in effect at the time of formal acceptance to a graduate certificate program or the catalog in effect at the time of graduation. Students may earn more than one graduate certificate by completing all requirements for each additional program.

Requirements for Graduate Degrees

MASTER'S DEGREES

UAF offers research-oriented (thesis or project) and practice-oriented (non-thesis) master's degrees. Research-oriented programs are designed to direct graduate students toward scholarly activity that leads to the acquisition of new knowledge. Practice-oriented programs prepare graduate students for professional practice and direct them toward application or transmission of existing knowledge. All degree requirements must be completed within a seven-year period. UAF tenured faculty, tenure track faculty and research faculty are not eligible to become candidates for a graduate degree within the discipline in which they teach.

The minimum requirements for a master's degree at UAF are as follows (individual departments may have additional requirements):

- **Steps Required for All Master's Degrees**

1. Formulate a unified degree program, in cooperation with your graduate advisory committee. Degree programs must be composed of courses in the discipline or clearly related to and/or supportive of that discipline. All courses to be applied toward the degree must be approved by the advisory committee and follow the requirements set forth by the department that sponsors the degree.
2. Specifically, master's degree students must:
   a. Be registered for a minimum of 6 F600- or F400-level credits per year (fall, spring and summer combined) or have an approved leave of absence form on file.
   b. Submit an Appointment of Committee form by the end of the first semester of study.
   c. Submit a Graduate Study Plan by the end of the second semester of study.
   d. Submit a Report of Advisory Committee form by May 15 of every year.
   e. Pass a written and/or oral comprehensive examination which may be combined with a project or thesis defense. Some programs (e.g., the M.B.A. degree program) may substitute a capstone course or synthesizing paper for the comprehensive examination. This includes demonstration of the ability to synthesize information in the field at a level appropriate for a master's degree.
   f. Submit an Advancement to Candidacy form to the Graduate School. Once submitted, this form supplants the GSP and formally establishes specific degree requirements.
   g. Pass an oral defense of the thesis or project if a thesis or project is required.
   h. Submit an application for graduation and be registered for at least 3 graduate credits in the semester in which the degree is to be awarded.
   i. Complete all degree requirements within the seven-year time limit.

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- **Credit Requirements**

1. Successfully complete a minimum of 30 semester credits.
2. Successfully complete at least 21 semester credits, including those earned for thesis and research/project, at the F600-level. Remaining credits may be applied from courses at the F400-level.
3. No F100-, F200-, F300-, or F500-level credits or audited courses may be applied toward master's degree requirements.
4. For programs requiring a thesis, a maximum of 12 credits of thesis (699)/research (698) (with a minimum of 6 credits of thesis) may be applied toward degree requirements. For programs requiring a project, a maximum of 6 research (698) credits may be applied toward degree requirements. A student may enroll in as many thesis and/or research credits as needed to remain in good standing.

- **Second Master's Degree Programs**
  At the discretion of your advisory committee, admitting department and dean, you may transfer up to 20 percent of the minimum number of credits required for a UAF master's degree from a previously earned master's degree. Transferred credit may not be research, project or thesis credit. The transferred credit must be for completed graduate-level courses and not portions of a course. For a 30-credit master's degree, for example, up to 6 graduate credits may be transferred; for a 45-credit master's degree, up to 9 graduate credits may be transferred. The following requirements apply to students who wish to pursue a second master's degree:
    1. Submit a new application, including application processing fee, updated transcripts and three new reference letters.
    2. Acceptable GRE scores submitted previously may be applied to a second master's degree.
    3. Fulfill all general university requirements for the second master's degree, including taking a comprehensive exam (if required), completing a minimum of 30 semester credits (including thesis, research and transfer credits), and passing a defense of thesis or project.
    4. All work used to fulfill degree requirements for a second master's degree must be completed within seven years.

DOCTOR OF PHILOSOPHY DEGREE

The doctor of philosophy degree is granted in recognition of scholarly attainment and proven ability. UAF tenured faculty, tenure track faculty and research faculty are not eligible to become candidates for a graduate degree within the discipline in which they teach at UAF.

- **Steps Required for all Doctoral Degrees**

1. The Ph.D. degree requires at least three full years of study beyond the baccalaureate degree. (See transfer credit.)
2. In addition to satisfactory completion of a plan of study developed in accordance with requirement listed above, the Ph.D. candidate must:
   a. Be registered for at least 6 F600- or F400-level credits per year (fall, spring and summer combined) or have an approved leave of absence form on file.
   b. Submit an Appointment of Committee form by the end of the first semester of study.
   c. Submit a Graduate Study Plan by the end of the second semester.
   d. Submit a Report of Advisory Committee form by May 15 of every year.
   e. Submit an Advancement to Candidacy form to the Graduate School. Once submitted, this form supplants the GSP and formally establishes specific degree requirements.
   f. Satisfactorily complete a dissertation that is a substantial contribution to the body of knowledge in the area studied.
   g. Pass an oral defense of the dissertation (an outside examiner is required). The oral defense of the dissertation must be conducted on the UAF campus.
   h. Apply for graduation and be registered for at least 3 graduate credits in the semester in which the degree is awarded.
   i. Complete all degree requirements within the 10-year time limit.
   j. Archive dissertation in the UAF Rasmuson Library.

- **Credit Requirements**

1. A minimum of 18 thesis (699) UAF credits must be earned.
2. No F100-, F200-, F300-, F500-level credits or audited courses may be applied toward the Ph.D.'s degree requirements.

EXCEPTIONS TO DEGREE REQUIREMENTS

Deviations from academic requirements and regulations for graduate students must be approved by academic petition using the form available on the Graduate School website. Petitions must be approved by the student's graduate advisory committee, the department chair of the student's program, the dean of the school or college and the dean of the Graduate School.

Types of Master's Degrees

MASTER OF ARTS — WITH THESIS

1. Successfully complete at least 30 credits of course work including at least 6 credits of thesis (F699). No more than 12 thesis/research (F699/F698) credits may be counted toward the minimum degree credits. At least 21 credits, including those earned for thesis and research/project, must be at the F600-level.
2. Pass a written and/or oral comprehensive examination (may be combined with the thesis defense).

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3. Present and defend the thesis.
4. Submit a completed and signed thesis defense form to the Graduate School.
5. Archive the thesis in the UAF Rasmuson Library.

MASTER OF ARTS — WITH PROJECT

1. Successfully complete at least 30 credits of course work including at least 6 credits of project work (F698), unless the degree requirements of a particular program specify that a 3-credit project is permitted. No more than 6 research (F698) credits may be counted toward the minimum degree credits. At least 21 credits, including those earned for thesis and research/project, must be at the F600-level.
2. Pass a written and/or oral comprehensive examination (may be combined with the project defense).
3. Present and defend the project.
4. Submit a completed and signed project defense form to the Graduate School.

MASTER OF ARTS IN TEACHING

The master of arts in teaching (M.A.T.) program is designed to serve baccalaureate graduates who qualify for the Alaska secondary school certificate, who intend to make secondary school classroom teaching their career, and who wish to take additional work in their teaching major and/or minor as well as in professional education courses. A bachelor's degree and teaching credentials are required for admission to an M.A.T. program. A student enrolls in the department in which the approved M.A.T. program is located. The M.A.T. degree has been approved for the following subject areas: biology, mathematics and physics. The M.A.T. degree requires that the student:

1. Complete general university and master's degree requirements.
2. Complete 36 credits, of which at least 24 credits, including research, must be at the F600-level. No more than 6 credits of research may apply toward the degree.
3. Pass a written comprehensive exam given by the student's advisory committee. There is no thesis requirement.

MASTER OF SCIENCE — WITH PROJECT

1. Successfully complete at least 30 credits of course work including at least 6 credits of project work (F698), unless the degree requirements of a particular program specify that a 3-credit project is permitted. No more than 6 research (F698) credits may be counted toward the minimum degree credits. At least 21 credits, including those earned for thesis and research/project, must be at the F600-level.
2. Pass a written and/or oral comprehensive examination (may be combined with the project defense).
3. Present and defend the project.
4. Submit a completed and signed project defense form to the Graduate School.

MASTER OF SCIENCE — WITH THESIS

1. Successfully complete at least 30 credits of course work including at least 6 credits of thesis (F699). No more than 12 thesis/research (F699/F698) credits may be counted toward the minimum degree credits. At least 21 credits, including those earned for thesis and research/project, must be at the F600-level.
2. Pass a written and/or oral comprehensive examination (may be combined with the thesis defense).
3. Present and defend the thesis.
4. Submit a completed and signed thesis defense form to the Graduate School.
5. Archive the thesis in the UAF Rasmuson Library.

MASTER OF BUSINESS ADMINISTRATION

1. Complete at least 30 credits of course work. At least 24 credits must be at the F600-level (6 at the F400-level).
2. Successful completion of a capstone course that includes demonstration of the ability to synthesize information in the field at a level appropriate for a master's degree.

MASTER OF CIVIL ENGINEERING

1. Complete at least 30 credits of course work. At least 21 credits, including those earned for thesis and research/project, must be at the F600-level.
2. Complete a comprehensive exam or capstone course that includes demonstration of the ability to synthesize information in the field at a level appropriate for a master's degree.

MASTER OF EDUCATION

1. Complete at least 30 credits of course work. At least 24 credits, including those earned for thesis and research/project, must be at the F600-level.
2. Complete a comprehensive exam or synthesizing paper that includes demonstration of the ability to synthesize information in the field at a level appropriate for a master's degree.

MASTER OF ELECTRICAL ENGINEERING

1. Complete at least 32 credits of course work. At least 26 credits, including those earned for thesis and research/project, must be at the F600-level.
2. Complete a comprehensive exam or capstone course that includes demonstration of the ability to synthesize information in the field at a level appropriate for a master's degree.

MASTER OF FINE ARTS

A general description is available in creative writing (see English) and art.

MASTER OF NATURAL RESOURCES MANAGEMENT AND GEOGRAPHY

A general description is available in the graduate degree programs listing.

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MASTER OF SOFTWARE ENGINEERING

A general description is available in the graduate degree programs listing.

SPECIALIZED PROGRAMS

The master's programs in northern studies, administration of justice and rural development at UAF have been selected as unique or specialized graduate programs by the Western Regional Graduate Program (WRGP) of the Western Interstate Commission for Higher Education (WICHE). This designation means that residents of Arizona, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, North Dakota, Oregon, Utah, Washington and Wyoming who major in any of these specialized programs at UAF pay resident tuition.

PEACE CORPS MASTER'S INTERNATIONAL PROGRAM

UAF and the U.S. Peace Corps participate in a cooperative master's degree program. This program provides an opportunity to integrate graduate study in rural development or natural resources management with international development practice through Peace Corps field experience.

To complete the program, two semesters of course work for the master's degree in rural development or natural resources management must be taken on the campus. This year of course work is followed by a two-year Peace Corps Volunteer assignment. On completion of the volunteer assignment, students return to the UAF campus to finish the master's degree requirements.

Students completing the program will be awarded a master of arts degree in rural development in the College of Rural and Community Development or a master of science degree in natural resources management in the School of Natural Resources and Agricultural Sciences.

Additional information is available by email at peacecorps@uaf.edu or by calling 907-474-7464.

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Graduate Degree Programs

ANTHROPOLOGY

College of Liberal Arts
Department of Anthropology
907-474-7288
www.uaf.edu/anthro/

M.A., Ph.D. Degrees

Minimum Requirements for Degrees: M.A.: 30 credits; Ph.D.: 18 thesis credits

The anthropology program offers a balanced and flexible program of academic courses and research opportunities in cultural anthropology, linguistic anthropology, archaeology and biological anthropology. Anthropology contributes to an understanding of the complex problems of human behavior, biology, language, cultural and social organization, and the relationship of humans to their environments. Research carried out in the field, laboratory and library emphasizes past and present modes of living and the origins and distribution of peoples and cultures throughout the world, with special attention to the circumpolar North.

The graduate program emphasizes general preparation in the field of anthropology. Such preparation enables graduates of the master's program to pursue more advanced training leading to the Ph.D. in anthropology, prepares them to teach anthropology within secondary education and/or undergraduate levels of higher education or prepares students for career positions with various levels of government in which some anthropological background and/or expertise is beneficial. Field research in Alaska is a common experience for graduate students in anthropology. All students must have fieldwork and laboratory experience appropriate to the discipline or subdiscipline.

The primary focus of the Ph.D. program is on the circumpolar North, although graduate students and faculty also conduct research elsewhere, in particular Africa and North America. The Ph.D. is available with an emphasis in any of the four subfields of anthropology.

Graduate Program — M.A. Degree

Complete the admission process including the following:

1. Submit GRE scores.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Complete the following:
   ANTH F629—Structures of Anthropological Argument 3
   ANTH F652—Research Design and Professional Development Seminar 3
5. Complete 18 credits established by the advisory committee, or complete the following requirements for a linguistic anthropology master's degree:
   a. Complete at least four semesters of an appropriate language (requirement may be met by previous language study or demonstrated competence).
   b. Complete the following courses as part of the 18 credits required by the advisory committee (noted in part 5):
   ANTH F631—Language and Culture Seminar 3
   ANTH/LING F632—Field Methods in Descriptive Linguistics 3
6. Complete one of the following:
   ANTH F698—Research (6)
   or ANTH F699—Thesis (6) 6
7. Minimum credits required .....30 – 36

Note: At least 24 credits must be regular course work (not research or thesis) with 21 of these credits at the F600-level.

Graduate Program — Ph.D. Degree

Complete the admission process including the following:

1. Submit GRE scores.
2. Complete the general university requirements (page 198).
3. Complete the Ph.D. degree requirements (page 203).
4. Complete course work in anthropology and related disciplines as determined by the advisory committee.
5. Complete one foreign language and a research tool, or two foreign languages.
6. Minimum credits required 18

ARCTIC ENGINEERING

College of Engineering and Mines
Department of Civil and Environmental Engineering
907-474-7241
www.uaf.edu/cem/cee/

M.S. Degree

Minimum Requirements for Degree: 30 credits

The arctic engineering program trains graduate engineers to deal with the challenges of design, construction and operations in cold regions of the world. Climatic, geological and logistical conditions of the Arctic and subarctic create special problems and require knowledge and techniques not usually covered in engineering courses.

A thorough understanding of heat transfer processes is of primary importance, and the properties of frozen ground and water are basic to most engineering in the Arctic. Arctic conditions also uniquely affect hydraulics, hydrology and utility operations.

Core required courses in the arctic engineering program teach engineers to understand and adapt to cold region problems. Students round out the program with advanced elective courses in a particular field of interest. Arctic engineering research carried out by faculty can provide students with opportunities for theses or project papers dealing with the most current arctic knowledge.

Development of petroleum and other natural resources has accentuated the demand for engineers who understand northern operations. Skilled engineers are needed both in private industries involved in development and within government agencies that plan and regulate development activity.

Graduate Program — M.S. Degree

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete at least five of the following core courses:
   CE F681—Frozen Ground Engineering 3
   CE F682—Ice Engineering (3)
   or GEOS F615—Sea Ice (3) 3
   CE F683—Arctic Hydrology and Hydraulic Engineering 3
   CE F684—Arctic Utility Distribution 3
   ME F685—Arctic Heat and Mass Transfer 3
   ME F687—Arctic Materials Engineering 3

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4. CE F698 or F699—Thesis or Project 3
5. Electives * .....12 – 15
6. Minimum credits required 30

* *All electives must be in areas related to or supportive of the student's degree program and approved by the student's graduate advisory committee.*

Note: CE F603—Arctic engineering is not an approved elective for the M.S. in arctic engineering.

See Civil Engineering.
See Engineering for Ph.D. program.
See Engineering Management.
See Environmental Engineering and Environmental Quality Science.
See Science Management.

ART

College of Liberal Arts
Department of Art
907-474-7530
www.uaf.edu/art/

M.F.A. Degree

Minimum Requirements for Degree: 60 credits

The M.F.A. degree provides artists with the necessary background to compete for state, national and international positions. Career opportunities include placement in state and federal arts organizations, galleries, museums, colleges and universities. This degree includes exposure to contemporary art world issues, the historic role of the artist and northern art. The M.F.A. degree in visual art is a terminal degree. Study is two-thirds in studio art. The degree culminates in a solo gallery exhibition.

Graduate Program — M.F.A. Degree

Concentrations: Ceramics, Computer Art, Drawing, Native Arts, Painting, Photography, Printmaking, Sculpture

1. Complete the following admission requirements:
   a. Submit a separate portfolio of work (about 20 slides or the appropriate equivalent depending on field of study).
   b. Complete a B.F.A. degree from a university other than UAF, or complete one consecutive year of classes from an accredited M.F.A. program other than UAF. In cases where an exceptional portfolio is submitted, students with a B.A. in art, or other undergraduate degree, will be accepted provisionally and with the condition that they make up any deficiencies as determined by their graduate committee. The same requirements are observed with the determination of previous schooling from a university other than UAF.
2. Complete the master's degree requirements (page 202).
3. Complete the following:
   ART F661—Mentored Teaching in Art 1
   ART F663—Seminar in Art History 3
   ART F690—Current Problems 3
   ART F698—MFA Project* (5)
   or ART F699—MFA Thesis* (5) 5
   Electives in art history, humanities or philosophy** 6
4. Complete at least two studio areas at the F600-level*** 39
5. Minimum credits required 60

* *Studio with 2 hour oral comprehensive examination*

** *The F400-level classes in these areas can be taken with additional requirements. Courses may be chosen from the following: ART F624, F625, F663 and F673.*

*** *Courses may be chosen from the following: ART F601, F607, F611, F613, F619, F672, F684, JRN F605.*

Note: Graduate students are required to be enrolled in a mentored teaching section while teaching.

ATMOSPHERIC SCIENCES

College of Natural Science and Mathematics
Department of Atmospheric Sciences
907-474-7368
www.uaf.edu/asp/

M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits; Ph.D.: 18 thesis credits

The field of atmospheric science covers a wide variety of disciplines involving the physical and chemical properties and processes of the atmosphere. Emerging trends in atmospheric science stress the interactions of the atmosphere with other components (i.e. land, sea ice, ocean) in the total earth system.

The UAF Geophysical Institute, the International Arctic Research Center and other university research institutes support active research programs in high-latitude atmospheric science that include faculty from the biology, chemistry, physics and other departments. Current research by atmospheric sciences focuses on: atmospheric chemistry/biogeochemistry, climate modeling, cloud and aerosol physics, mesoscale modeling, numerical weather prediction and aviation weather. In addition, scientists affiliated with the research institutes conduct research on ocean-atmosphere interactions, dynamic meteorology, microclimatology, polar meteorology, radiative transfer, cryosphere-atmosphere interactions and remote sensing.

Graduate students are an integral component of this research, both in the laboratory and the field. Research institutes provide excellent environments for research in atmospheric science as well as interdisciplinary research with scientists in other research areas.

Graduate Program — M.S. Degree

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete four of the five following basic courses in atmospheric sciences:
   ATM F601—Introduction to Atmospheric Science 3
   ATM F606—Atmospheric Chemistry 3
   ATM F613—Atmospheric Radiation 3
   ATM F615—Cloud Physics 3
   ATM F645—Atmospheric Dynamics 3
4. Complete additional approved F600-level courses 12
5. Complete ATM F699—Thesis .....6 – 12
6. Minimum credits required 30

Graduate Program — Ph.D. Degree

1. Complete the general university requirements (page 198).
2. Complete the Ph.D. degree requirements (page 203).
3. Complete the following basic courses in atmospheric sciences:
   ATM F601—Introduction to Atmospheric Science 3
   ATM F606—Atmospheric Chemistry 3
   ATM F613—Atmospheric Radiation 3
   ATM F615—Cloud Physics 3
   ATM F645—Atmospheric Dynamics 3
4. Complete the additional course requirements determined in conjunction with the graduate advisory committee.
5. Minimum credits required 18

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BIOCHEMISTRY AND MOLECULAR BIOLOGY

College of Natural Science and Mathematics
Department of Chemistry and Biochemistry
907-474-5510
www.uaf.edu/chem/

M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits; Ph.D.: 18 thesis credits

Biochemistry and molecular biology is an interdepartmental program administered by the Department of Chemistry and Biochemistry with research support through the Institute of Arctic Biology. A broad range of biomedical research experiences are available including molecular and cellular neuroscience, proteomics, protein structure-function and molecular toxicology. The arctic environment provides additional research opportunities in environmental biochemistry, adaptations and molecular genetics.

UAF faculty and affiliate faculty at collaborating institutions provide a rich academic environment encompassing both research and comprehensive course offerings. Students with career interests in biotechnology, pharmaceutical sciences, environmental health, genetics and biomedicine are encouraged to apply. Students are normally accepted with financial support (fellowships, research assistantships and/or teaching assistantships) along with tuition waivers.

Graduate Program — M.S. Degree

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete the following three core courses:
   CHEM F654—Protein Structure and Function.....3
   CHEM F657—Molecular Foundations of Gene Expression 3
   CHEM F674—Membrane Biochemistry and Biophysics.....3
4. Complete a research thesis.
5. Minimum credits required.....30

Graduate Program — M.S. Degree with Neuroscience Option

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete the following three core courses:
   CHEM F654—Protein Structure and Function.....3
   CHEM F657—Molecular Foundations of Gene Expression 3
   CHEM F674—Membrane Biochemistry and Biophysics.....3
4. Complete the following neuroscience course:
   BIOL F617—Neurobiology.....3
5. Complete a neuroscience research thesis
6. Minimum credits required.....30

Graduate Program — Ph.D. Degree

1. Complete the general university requirements (page 198).
2. Complete the Ph.D. degree requirements (page 203).
3. Complete the following three core courses:
   CHEM F654—Protein Structure and Function.....3
   CHEM F657—Molecular Foundations of Gene Expression 3
   CHEM F674—Membrane Biochemistry and Biophysics.....3
4. Complete three electives.
5. Complete Ph.D. dissertation.
6. Complete two seminar series (CHEM F692).
7. Minimum credits required (including core courses).....38

Graduate Program — Ph.D. Degree with Neuroscience Option

1. Complete the general university requirements (page 198).
2. Complete the Ph.D. degree requirements (page 203).
3. Complete the following three core courses:
   CHEM F654—Protein Structure and Function.....3
   CHEM F657—Molecular Foundations of Gene Expression 3
   CHEM F674—Membrane Biochemistry and Biophysics.....3
4. Complete three electives with two of the electives in neurosciences.
5. Complete Ph.D. dissertation in a field of neuroscience.
6. Complete two seminar series (CHEM F692).
7. Minimum credits required (including core courses).....38

BIOLOGICAL SCIENCES

College of Natural Science and Mathematics
Department of Biology and Wildlife
907-474-7671
www.bw.uaf.edu

M.S., M.A.T., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits; M.A.T.: 36 credits; Ph.D.: 18 thesis credits

UAF biological sciences graduate students have extraordinary opportunities to conduct independent biological research in controlled-experiment or field settings, taking advantage of arctic, alpine and boreal environments near campus or at remote locations.

The department has close connections with the National Science Foundation taiga Long Term Ecological Research (LTER) site, located about 20 miles from campus. Our students also have access to the tundra LTER site at Toolik Lake, where the UAF Institute of Arctic Biology runs a field station.

Facilities available to graduate students on the Fairbanks campus include small mammal colonies, the Large Animal Research Station, both electron and light microscope laboratories, an imaging laboratory and a greenhouse facility. Students and faculty work on systematic collections in the UA Museum of the North using a variety of approaches from traditional morphology to molecular biology.

The program has strong research emphases in arctic plant ecophysiology, plant-animal coevolution, insect ecology (terrestrial and aquatic), bird and mammal physiological ecology, vertebrate population dynamics, biology of seabirds, molecular evolution and systematics, pollution ecology, wetland ecology, population genetics, ungulate biology and wildlife management.

Advanced degree recipients gain significant teaching experience conducting labs, and a few take primary responsibility for instruction in a course at the undergraduate level. Our graduates have pursued careers in education at the university, community college and secondary levels. Many find professional positions with state and federal resource agencies, with whom the department faculty maintain close contact.

The Department of Biology and Wildlife has approximately 100 graduate students. The atmosphere is informal and students and faculty interact frequently, not only in small-enrollment classes, but also on field trips and in community and social settings.

Research assistantships are available on a competitive basis. Teaching assistantships in department courses provide excellent experience. Competitive fellowships are available through the UAF Graduate School. Applicants interested in graduate assistantships should contact the department for assistantship application forms.

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Graduate Program — M.S. Degree

1. Complete the admission process including the following:
   a. Submit scores from both the GRE General Test (required) and the GRE Subject Test in Biology (highly recommended).
   b. If English is not your native language, submit scores from both the Test of Spoken English (TSE) and the Test of Written English (TWE), as well as TOEFL scores. Requests, including justification, for exceptions to this requirement should be made to the chair of the department.
2. Complete the general university requirements (page 198).
3. Complete the M.S. — with Thesis degree requirements (page 203).
4. As part of the M.S. degree requirements, complete and pass the departmental written and oral master's comprehensive examination.
5. Minimum credits required.....30

Graduate Program — M.A.T. Degree

1. Complete the admission process including the following:
   a. Submit scores from both the GRE General Test (required) and the GRE subject Test in Biology (highly recommended).
   b. If English is not your native language, submit scores from both the Test of Spoken English (TSE) and the Test of Written English (TWE), as well as TOEFL scores. Requests, including justification, for exceptions to this requirement should be made to the chair of the department.
2. Complete the general university requirements (page 198).
3. Complete the M.A.T. degree requirements (page 204).
4. Minimum credits required.....36

Note: Persons interested in this degree program should contact the department chair.

Graduate Program — Ph.D. Degree

Concentration: Wildlife Biology and Conservation

1. Complete the admission process including the following:
   a. Submit scores from both the GRE General Test (required) and the GRE Subject Test in Biology (required for applicants holding only a bachelor's degree; highly recommended for applicants who have already earned a master's degree).
   b. If English is not your native language, submit scores from both the Test of Spoken English (TSE) and the Test of Written English (TWE), as well as TOEFL scores. Requests, including justification, for exceptions to this requirement should be made to the chair of the department.
2. Complete the general university requirements (page 198).
3. Complete the Ph.D. degree requirements (page 203).
4. As part of the Ph.D. degree requirement, complete the following:
   a. If entering with only a bachelor's degree, complete and pass the departmental written and oral Ph.D. qualifying examination.
   b. Complete and pass a written and oral comprehensive examination by the graduate advisory committee.
   c. In this program or in previous post-baccalaureate programs, complete course work at least equivalent to that required for the M.S. degree.
5. Minimum credits required.....18

See Wildlife Biology and Conservation.

BUSINESS ADMINISTRATION

School of Management
907-474-4622
www.uaf.edu/som/programs/ba/

M.B.A. Degree

Minimum Requirements for Degree: 30 credits

The School of Management offers professional education applicable to the fields of management, finance, human resource management, international business, marketing and travel industry management to individuals interested in entering industry or government.

The program prepares graduates to meet the complex problems of the technical, economic and social environment and to enable them to provide imaginative and responsible leadership to industry and government.

The UAF program recognizes that competence in the practice of management necessitates education with both breadth and depth. The graduate program is accredited by the Association to Advance Collegiate Schools of Business.

Graduate Program — M.B.A. Degree

Concentrations: Capital Markets, General Management

1. Complete the admission process including the following:
   a. Applications will be reviewed on a continuous basis
   b. UAF B.B.A. students may be admitted to the M.B.A. program prior to graduating if they meet one of the following:
      i. Have at least a 'B' in BA F325, BA F343, BA F360, BA F390 and ECON F227
      ii. have senior standing and an overall GPA of 3.25 or have at least a 'B' in BA F325, BA F343, BA F360, BA F390 and ECON F227
      iii. have senior standing, an overall GPA of 3.0 and a minimum GMAT score of 500 (an average GRE score of 500 will also be accepted)
   c. Non-UAF applicants with a bachelor's degree with a business major from an AACSB-accredited institution and a 3.25 GPA will be admitted without taking the GMAT or GRE. Other applicants must submit results from the GMAT or GRE.
   d. Students with a graduate degree from an accredited institution will be admitted without taking the GMAT or GRE.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. If a student earns grades of two Cs, one D, or one F in courses that are part of his/her M.B.A. program, the student will no longer be in good standing in the M.B.A. program even if his/her cumulative GPA remains at or above 3.0. M.B.A. Students who are not in good standing will be subject to review and may be dismissed by the M.B.A. committee. Students may not use more than two F600-level courses with C grades on their Advancement to Candidacy application. An A or B grade must be earned in F400-level courses.
5. Complete the following foundation courses if previous college work is not in business:
   ACCT F602—Accounting for Managers 3
   BA 652—Fundamentals of Business.....3
   ECON 621—Fundamentals of Economics.....3
   ECON 628—Analytical Methods for Economics and Business 3
6. Complete the following advanced M.B.A. core courses after all foundation course requirements (part 5) are completed:
   BA F617—Organizational Theory for Managers 3
   BA F643—Marketing Management 3

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BA F675—Quantitative Methods for Managers.....3
BA F680—Financial Markets and Strategy.....3

7. Complete the following capstone course:
   BA F690—Corporate Strategy 3
8. Complete one of the following concentrations:*

Capital Markets

a. Complete three of the following:
   ACCT F605—Contemporary Topics in Accounting 3
   BA F620—Portfolio Theory and Asset Pricing.....3
   BA F630—Derivative Securities.....3
   BA F681—Fixed Income Securities and Markets.....3
   BA F682—Financial Statement Analysis 3
b. Complete two approved electives at the F400- or F600-level ...6
c. Minimum credits required.....30

General Management

a. Complete three of the following:
   ACCT F605—Contemporary Topics in Accounting 3
   AIS F673—Technology Management 3
   BA F607—Human Resources Management.....3
   BA F682—Financial Statements Analysis.....3
   BA F683—Advanced Topics in Marketing.....3
   BA F691—Advanced Topics in Business 3
b. Complete two approved electives at the F400- or F600-level ...6

9. Minimum credits required.....30

* *Both concentrations may be earned for degree; however, courses used in one concentration may not be used to meet requirements in the other concentration.*

CHEMISTRY

College of Natural Science and Mathematics
Department of Chemistry and Biochemistry
907-474-5510
www.uaf.edu/chem/

M.A., M.S. Degrees

Minimum Requirements for Degrees: 30 credits

Graduates in chemistry qualify for employment in many fields as teachers of chemistry; supervisors in industry; technical sales personnel; research chemists in federal, state, municipal, academic or industrial laboratories; in pre-medicine; and as laboratory technicians. The rapid introduction of chemical techniques in all branches of commerce and the creation of many synthetic products have 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 sciences, oceanography and related interdisciplinary fields. Many recipients of chemistry master's degrees continue their education to obtain Ph.D. degrees at other universities.

The department offers well-equipped laboratories housing instrumentation for nuclear magnetic resonance spectrometry, infrared, ultraviolet/visible, and atomic absorption spectrophotometry, mass spectrometry, gas chromatography, amino acid analysis and HPLC. Additional equipment for gas chromatography/mass spectrometry, x-ray diffractometry, electron microscopy and liquid scintillating counters is available in cooperation with other UAF departments and institutes.

Graduate Program — M.A. Degree*

1. Complete the requirements for the M.S. degree in chemistry.

* *This is a non-thesis degree program. Substitute a research project (CHEM F698) for thesis.*

Graduate Program — M.S. Degree

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete a research-based thesis.
4. Complete seminar.....2
5. Complete at least one semester of assisting in an undergraduate chemistry laboratory.
6. Minimum credits required.....30

See Biochemistry and Molecular Biology.
See Environmental Chemistry.

CIVIL ENGINEERING

College of Engineering and Mines
Department of Civil and Environmental Engineering
907-474-7241
www.uaf.edu/cem/cee/

M.C.E., M.S. Degrees

Minimum Requirements for Degrees: 30 credits

Civil engineers plan, design and supervise the construction of facilities essential to modern life in both the public and private sectors. These facilities 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 use sophisticated technology and employ computer-aided engineering during project phases of design, construction, project scheduling and cost control. Civil engineers are problem solvers involved in community development and improvement. They meet the challenges of pollution, deteriorating infrastructure, traffic congestion, energy needs, floods, earthquakes, urban redevelopment and community planning. The opportunity for creativity is unlimited.

The civil engineering program at UAF began in 1922, had its first graduate in 1931 and since has graduated more than 800 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. The UAF civil engineering program has been accredited since 1940 by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. All engineering programs in the department give special attention to problems of northern regions.

Graduate students may enter one of two programs: the master of civil engineering is for those whose goal is broad professional practice. Those whose interests or background favor a specialized program, with emphasis on research and/or advanced specialized study, will ordinarily select the master of science degree.

In addition to general civil engineering courses, specialties are available in transportation, geotechnical, structures, water resources, hydrology and environmental studies. These courses emphasize principles of analysis, planning and engineering design in northern regions.

A master's degree program can include courses in environmental engineering, engineering management and other areas. An advanced degree in environmental engineering, administered within the civil engineering department, is available.

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www.alaska.edu/titleIXcompliance/nondiscrimination.

Graduate Program — M.C.E. Degree

1. Complete the following admission requirements:
   a. Complete a bachelor's degree in civil engineering.
   b. International students must complete the TOEFL with a score of 575 or better.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Complete a project.....3 – 6
5. Minimum credits required.....30

Note: M.C.E. candidates will have passed a fundamentals of engineering examination prior to the awarding of the degree.

Graduate Program — M.S. Degree

1. Complete the following admission requirements:
   a. Complete a bachelor's degree in civil engineering.
   b. International students must complete the TOEFL with a score of 575 or better.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Complete a thesis.....6 – 12
5. Minimum credits required.....30

   See Arctic Engineering.
   See Engineering for Ph.D. program.
   See Engineering Management.
   See Science Management.
   See Environmental Engineering and Environmental Quality Science.

COMMUNICATION, PROFESSIONAL

College of Liberal Arts
Department of Communication
907-474-6591
www.uaf.edu/comm/

M.A. Degree

Minimum Requirements for Degree: 30 – 34 credits

The communication program prepares students to handle the challenges of communicating effectively and ethically in a rapidly changing world characterized by diversity in gender, cultural background and belief.

The M.A. in professional communication provides advanced education for individuals in or pursuing communication related careers in public/nonprofit organizations, media organizations, health care organizations or in higher education. Students take courses that focus on organizational communication theory and practices.

The program is both theoretically and pragmatically oriented to prepare students for the professional workplace or for doctoral study in organizations.

Graduate Program — M.A. Degree

1. Complete the following additional admission requirement: Submit academic writing sample.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Complete the following:
   a. COMM F600—Introduction to Professional Communication.....3
      COMM F601—Communication Research Methodologies (Social Science).....3
      COMM F602—Communication Research Methodologies (Human Science).....3
      COMM F625—Communication Theory.....3
      COMM F675—Training and Development Communication.....3
      COMM F680—Communication and Diversity in the Professional World.....3
      COMM F699—Thesis.....6
   b. Complete two of the following electives:*
      COMM F622—Interpersonal Interaction.....3
      COMM F631—Teambuilding.....3
      COMM F635—Organizational Culture and Communication.....3
      COMM F642—Health Communication.....3
      COMM F682—Seminar in Communication.....3
   c. Teaching assistants complete the following:
      COMM F661—Mentored Teaching in Communication**.....1 – 4
5. Minimum credits required.....30 – 34

* *Students may take F400- and F600-level courses in art, education, English, journalism, communication, marketing, business administration and northern studies as well as graduate level independent studies to fulfill 6 credits of the elective requirement, if approved by the student's committee. Students will also be able to apply up to 6 credits of appropriate graduate level course work from other universities in the elective area if approved by the student's committee.*

** *This 1 credit course may be taken up to four times.*

Note: A maximum of 6 credits of approved F400-level courses may be included in the 30 – 34 credit requirement.

Note: The comprehensive examination is to be taken no later than the student's fourth semester of work.

COMPUTER SCIENCE

College of Engineering and Mines
Department of Computer Science
907-474-2777
www.cs.uaf.edu

M.S. Degree

Minimum Requirements for Degree: 30 credits

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 M.S. degree follows the recommendations of the Association for Computing Machinery and the Institute for Electrical and Electronic Engineers. The program provides breadth and depth in course work and culminates with a major unifying project. This program is available to students who have completed a B.S. degree in computer science at most institutions. Students from other universities who have completed a substantial portion of a bachelor's level computer science program may be admitted to the M.S. program. In such cases, undergraduate courses may be required to remedy deficiencies.

For admission to the M.S. computer science program, the GRE general and computer science subject exam is required.

Graduate Program — M.S. Degree

1. Complete the UAF admission process including the following:
   a. Submit GRE general and computer science subject exam scores.
   b. For teaching assistantship consideration, foreign applicants whose native language is not English must submit a TOEFL score of at least 600.
   c. The department gives preference to applicants who also submit results of the Test of Spoken English (TSE).
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).

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4. Complete the following:
   CS F611—Complexity of Algorithms.....3
   CS F631—Programming Language Implementation.....3
   CS F641—Advanced Systems Architecture.....3
   CS F671—Advanced Software Engineering.....3
   CS F690—Graduate Seminar and Project.....3
   CS F691—Graduate Seminar and Project.....3
   Approved electives.....12
5. Minimum credits required.....30

CONSTRUCTION MANAGEMENT

College of Engineering and Mines
Department of Civil and Environmental Engineering
907-474-6121
www.uaf.edu/cem/cee/

Graduate Certificate

Minimum Requirements for Certificate: 15 credits

The graduate certificate in construction management is designed to advance the managerial skills and decision-making abilities of engineers and other professionals in the construction industry. The program was designed in collaboration with construction industry employers and continues to engage industry as a partner in the program. Engineers and other construction professionals will enhance their skills to help prepare them for more responsible jobs and help them advance to more responsible management positions.

The program permits flexibility of course selection within the major rubrics: human relations, communications, construction project management and technical construction areas.

Graduate Program — Graduate Certificate

1. Complete the following admission requirements:
   a. A four-year ABET college degree in engineering and at least two years' construction experience;
      or a four-year non-ABET college degree in engineering, science or mathematics and at least four years construction experience;
      or a four-year college degree and at least six years construction experience;
      or at least 10 years construction experience.
2. Complete the general university requirements (page 198), and
   a. The student must enroll in one course per year to remain in good standing.
   b. The graduate advisory committee will be a construction management certificate faculty member or faculty committee as appointed by the dean of CEM.
   c. The student will complete a graduate study plan after completing 5 credits.
3. Complete the graduate certificate requirements (page 202).
4. Complete 15 credits from three main construction management rubrics and two associated rubrics as approved by the student's advisory committee.
   a. Human relations and communication
      BA F607—Human Resources Management (3)
      or ESM F601—Managing and Leading Engineering Organizations (3)
      or other approved human relations courses.....4 – 6
   b. Construction project management and scheduling
      CE F620—Civil Engineering Construction (3)
      or ESM F609—Project Management (3)
      or ESM F608—Legal Principles for Engineering Management (3)
      or other approved construction project management courses.....4 – 6
   c. Technical management of construction and costs
      CE F451—Construction Cost Estimation and Bid Preparation (3)
      or CE F603—Arctic Engineering (3)
      or ESM F622 —Engineering Decisions (3)
      or other approved technical management of construction and costs courses.....4 – 6
   d. Business and Financial aspects of construction
      ACCT F602—Accounting for Managers (3)
      or ESM F605—Engineering Economics (3).....0 – 3
   e. Other technical areas
      CE F603—Arctic Engineering (3)
      or ENVE F644 —Environmental Laws and Permitting (3).....0 – 3
5. Minimum credits required.....15

COUNSELING

School of Education
907-474-7341
www.uaf.edu/educ/graduate/counseling/

M.Ed. Degree

Minimum Requirements for Degree: 48 or 54 credits

The University of Alaska Graduate Counseling Program prepares students to become culturally responsive effective practitioners through coursework and supervised internship experiences that emphasize an ecological perspective. Students who complete the School Counseling track, a 48 credit-hour program, are eligible to be licensed as professional school counselors in the state of Alaska. Students who complete the Community Counseling track, a 54 credit-hour program, are eligible for licensure as mental health counselors, with additional post-degree requirements. Students who complete this track are eligible to work in community/mental health agencies or as private clinicians once licensed.

Students who are completing either program track through distance education are required to complete COUN F634 (Individual Practicum) and COUN F674 (Group Counseling) on the Fairbanks campus. These courses are offered in alternating summers.

Graduate Program — M.Ed. Degree

1. Complete the following admission requirements:
   a. Applications will be reviewed on March 1 for admission to the fall semester.
   b. Admission requires a bachelor's degree in a human service area such as education, social work, psychology, human services, etc. Suitability of other degrees will be considered on an individual basis by counseling faculty.
   c. Applicants must have a GPA of 3.0 or higher in their undergraduate degree or take the Graduate Record Exam.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Complete internship placements appropriate to the student's declared area of interest.
5. Complete the following course requirements:
   COUN F615—Foundations of Counseling.....3
   COUN F623—Counseling Theories and Applications I.....3
   COUN F628—Child and Adolescent Development.....3
   COUN F629—Counseling Interventions.....3
   COUN F632—Career Development.....3
   COUN F630—Appraisal for Counselors.....3
   COUN F634—Practicum in Individual Counseling.....3

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COUN F636—Internship I* .....3 – 9
COUN F647—Professional Ethics.....3
COUN F660—Cross-Cultural Counseling.....3
COUN F674—Group Counseling 3
COUN F690—Internship II*.....3 – 9
COUN F698—Research Project (3 – 6)
or COUN F699—Thesis (6) .....3 – 6
ED F601—Introduction to Applied Social Science Research 3

6. Complete the following classes for school counseling track:
COUN F646—School Counseling.....3
Elective credits.....3

7. Complete the following classes for community counseling track:
COUN F638—Advanced Lifespan Development 3
COUN F650—Cross Cultural Psychopathology 3
COUN F666—Family and Network Therapy.....3

8. Minimum credits required..... 48 or 51

* *Additional fee required. Charges are added to fee statements each semester. For School Counseling, students must complete 3 credits of Internship I and 3 credits of Internship II for each school counseling certification level. K-12 certification requires 6 credits of Internship I and 6 credits of Internship II: 6 elementary, 6 secondary. For community counseling, students must complete 3 credits of Internship I–Community and 6 credits of Internship II–Community.*

Note: Courses assigned by the student's graduate committee to remove deficiencies will not be allowed as part of the graduate program.

School Counselor Certification Program

1. Complete the following admission requirements:
   a. Application to the licensure only program follows the same admission requirements and procedures as for the M.Ed. in counseling.
   b. People who currently hold master's degrees in education or one of several helping professions such as social work, psychology, or human services (as approved by counseling faculty) may apply.

2. Complete the following certification requirements:
COUN F615—Foundations of Counseling 3
COUN F623—Counseling Theories and Applications I 3
COUN F628—Child and Adolescent Development.....3
COUN F629—Counseling Interventions* 3
COUN F632—Career Development.....3
COUN F630—Appraisal for Counselors 3
COUN F634—Practicum in Individual Counseling.....3
COUN F636—Internship I* ..... 3 - 6
COUN F646—School Counseling.....3
COUN F647—Professional Ethics.....3
COUN F660—Cross-Cultural Counseling.....3
COUN F674—Group Counseling 3
COUN F690—Internship II*.....3 – 6

3. Minimum credits required.....39

* *Additional fee required. Charges are added to fee statements each semester. For School Counseling, students must complete 3 credits of Internship I and 3 credits of Internship II for each school counseling certification level. K-12 certification requires 6 credits of Internship I and 6 credits of Internship II: 6 elementary, 6 secondary.*

CROSS-CULTURAL STUDIES

College of Liberal Arts
Department of Alaska Native Studies
907-474-1902
www.uaf.edu/cxcs/

M.A. Degree

Minimum Requirements for Degree: 36 Credits

The cross-cultural studies M.A. degree program emphasizes indigenous knowledge systems. The program is designed to provide graduate students from various fields of interest an opportunity to pursue in-depth study of the role and contributions of indigenous knowledge in the contemporary world. Students are expected to demonstrate the ability to work effectively with indigenous people in their studies.

Graduate Program — M.A. Degree

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete at least 6 credits in a field setting, including minimum of one week camp with elders.
4. Complete at least 36 semester hours beyond the bachelor's degree level. (Students may transfer a maximum of 9 hours from another university into their program.)
5. Complete at least 30 of the 36 semester hours at the F600-level.
6. Satisfactorily complete a comprehensive examination.
7. Complete the following core courses:
CCS F601—Documenting Indigenous Knowledge 3
CCS F608—Indigenous Knowledge Systems 3
CCS F612—Traditional Ecological Knowledge.....3
CCS/ED F690—Seminar in Cross-Cultural Studies 3
8. Complete at least one of the following cross-cultural studies specialization courses:
ANS/ED F461—Native Ways of Knowing.....3
CCS/ED F610—Education and Cultural Processes.....3
RD F425—Cultural Impact Analysis.....3
9. Complete a minimum of 15 credits of approved electives to provide specialization depth. Example of approved electives include the following:
ANS F475—Alaska Native Social Change 3
CCS F602—Cultural and Intellectual Property Rights.....3
CCS/ED F603—Field Study Research Methods 3
CCS/ED F611—Cultural, Cognition and Knowledge Acquisition.....3
CCS/ED F613—Alaska Standards for Culturally Responsive Schools.....3
10. Complete CCS F698—Field Study/Elder Apprenticeship.....6
11. Minimum credits required.....36

ECONOMICS, RESOURCE AND APPLIED

School of Management
Department of Economics
907-474-7461
www.uaf.edu/som/programs/msecon/

M.S. Degree

Minimum Requirements for Degree: 30 – 33 credits

Economics is the study of social activities concerned with the production, distribution and consumption of goods and services. In

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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 economics department offers study leading to the M.S. degree in resource and applied economics. The resource economics program offers a specialization in the economics of natural resources with emphasis in a variety of specific fields possible through interdisciplinary elective courses and thesis research. These might include fisheries, wildlife management, land resources management, agriculture, oil and minerals, water resources or forest management.

The program consists of core course work in micro- and macro-economic theory, mathematical economics, economic methods and courses in the economic theory and public policy of natural resources. Master's candidates may select a thesis or non-thesis option. Thesis topics, consistent with students' interest and project requirements, may be selected from current research projects of the department or from one of the several research institutes on campus. Most research projects deal with issues pertinent to the development and management of Alaska's renewable and nonrenewable resources.

Graduate Program — M.S. Degree

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Students may be accepted into the program subject to identified deficiencies being rectified. Unconditional acceptance into the program requires completion of intermediate microeconomics and macroeconomics, basic statistics and one semester of calculus.
4. Complete the following:
   ECON F601—Microeconomic Theory I.....3
   ECON F603—Macroeconomic Theory 3
   ECON F623—Mathematical Economics 3
   ECON F626—Econometrics 3
   ECON F635—Renewable Resource Economics 3
   ECON F636—Non-Renewable Resource Economics.....3
5. Complete the thesis or non-thesis requirements:
   Thesis*
   a. Complete the following:
      ECON F699—Thesis 6
      Electives.....6
   b. Minimum credits required 30

   Non-Thesis*
   a. Complete the following:
      ECON F698—Project 3
      Electives at the F600-level.....6
      Electives.....6
   b. Minimum credits required 33

* *Complete at least 25 credits at the F600-level.*

EDUCATION

School of Education
907-474-7341
www.uaf.edu/educ/

M.Ed. Degree and Post-Baccalaureate Licensures

Minimum Requirements for Art K – 12 Licensure: 34 credits; Elementary Post-Baccalaureate Licensure: 35 – 39 credits; Secondary Post-Baccalaureate Licensure: 31 credits; Special Education K – 12 Post-Baccalaureate Licensure Program Certificate of Completion: 30 credits; M.Ed.: 30 credits

The University of Alaska Fairbanks complies fully with the institutional reporting requirements mandated in Title II of the Higher Education Act Amendments of 1998. Please contact the School of Education for a copy of the complete report.

The UAF School of Education prepares students from across Alaska, as well as from other states and nations, to work in urban and rural Alaska and to work with multicultural and minority — especially Alaska Native — students. To fulfill our commitment to enhancing educational opportunities for the state's rural and Native populations, faculty actively and knowledgeably utilize educational technology to deliver all School of Education programs to students in most areas of the state.

The School of Education offers programs in elementary education, secondary education, counseling, curriculum and instruction, and reading at both the post-baccalaureate and master of education degree levels. During their internships, candidates pay an additional fee. Charges are added to fee statements each semester.

The UAF School of Education is approved by the Alaska Department of Education and Early Development to recommend its students for Alaska licensure as elementary and secondary teachers and school counselors. Courses are available on-site and by distance delivery through the Kuskokwim, Bristol Bay, Interior-Aleutians, Chukchi, and Northwest campuses, as well as on the Fairbanks campus. Faculty research in cross-cultural studies, curriculum and instruction, language and literacy, and small rural schools support the mission of the School of Education.

Priority for enrollment in field-based courses is given to rural students formally admitted to degree and licensure programs. All inquiries should be addressed to one of the rural campuses or to the School of Education's Student Services office.

Candidates for elementary and secondary licensures are required to have use of/own a laptop computer before enrolling in the fall semester. This computer may be of any type but must have capacities that enable the candidate to meet School of Education requirements. Candidates enrolled in School of Education courses at any level (with the exception of 500 level professional development courses) are eligible to purchase a Macintosh laptop computer at a special discount through the School of Education.

Licensure Information

UAF education programs are approved by the Alaska State Board of Education standards and accredited by the National Council for the Accreditation of Teacher Education. For information about these programs contact one of the School of Education academic advisors.

The state of Alaska requires that all initial applicants for a teaching certificate provide evidence of passing Alaska qualifying scores on the Praxis I; Academic Skills Assessment including the Pre-Professional Skills Test (PPST) and/or the Computer-Based Academic Skills Assessment (CBT). For additional information, visit the website of the State Department of Education and Early Development at www.eed.state.ak.us/TeacherCertification/.

Art K – 12 Licensure Program toward M.Ed., Secondary Education

Offered on the Fairbanks campus only, this is an intensive, classroom-based K – 12 art licensure program (34 credits) that prepares post-baccalaureate candidates for K – 12 teaching positions. The program is specifically designed to prepare candidates to teach in multicultural settings in Alaska. The content will specifically identify and discuss current issues of art education and applying Alaska content/performance standards and frameworks as well as national standards for art education.

Candidates who apply as graduate applicants may simultaneously pursue teacher licensure and the M.Ed. secondary education degree. Significant additional course work will be required. (See requirements for M.Ed. secondary education.)

At the end of the program, if students have successfully met all of the program requirements, they will be eligible to apply for an

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Alaska initial teaching license and will receive certificates of completion from UAF.

Candidates who enter the K – 12 Art Licensure program are required to have use of/own a laptop computer before they begin their internships in the fall semester of their professional year.

For program options and professional field experiences information, please see information listed in the catalog (page 216) for the secondary post-baccalaureate licensure program.

Admission to the secondary post-baccalaureate licensure program toward M.Ed. in secondary education includes meeting requirements of the UAF Graduate School and the School of Education. Candidates take five of the licensure courses at the 600-level.

Admission Process and Requirements

Applicants will follow the admission process and requirements listed in the catalog (page 216) for the secondary post-baccalaureate licensure program, with the exception that applicants must have a bachelor's degree in art from an accredited university or college. Applicants should be aware that additional content course work may be required, depending on content of degree. Additional course work, as determined by the appropriate departments, may mean a delay of program admission until requirements are fulfilled.

Program Requirements

1. Complete the following:
   a. Summer:
      EDSC F415—Foundations of Modern Educational Practices ...3
      EDSC F614—Learning, Development and Special Needs Instruction ...3
      PSY F240—Lifespan Development (3) or (preferred) PSY F245—Child Development (3) ...3
   b. Fall:
      EDSC F402—Methods of Teaching in the Secondary School ...3
      EDSC F636—Secondary Art Instruction and Assessment ...3
      ED F453/ART F459—Secondary Internship ...3
      EDSC F658—Classroom Organization and Management ...3
   c. Spring:
      ED F449—Elementary Art Methods ...3
      ED F452/ART F458—Elementary Internship ...3
      EDSC F657—Multicultural Education and School-Community Relations ...4
      EDSC F642—Technology Applications in Education ...3
2. Minimum credits required ...34

Elementary Post-Baccalaureate Licensure Program

This program is offered in Fairbanks and College of Rural and Community Development campus service areas. The elementary teacher post-baccalaureate program is an intensive, year-long program designed to provide students with the course work and internship experience necessary to meet the Alaska Teacher Standards and be eligible for licensure as an elementary teacher in Alaska. This classroom-based program is built upon the principle of partnership — a cooperative effort between interns, mentor teachers and university faculty partners.

Students begin the program in the summer with a 9-credit block of courses. Students who complete the undergraduate courses ED F110, F201, F330, F344, and EDSE F482 can use these to fulfill the summer requirements. During the academic year of the school district, all students complete two semesters of integrated university courses and internship.

Students must apply through the Office of Admissions and the Registrar to graduate with a certificate of completion. At the end of the school year, if students have successfully met all of the program requirements, they will be eligible to apply for an Alaska Elementary License.

Elementary applicants apply as graduate-level licensure students. They may choose to complete this licensure program as part of the M.Ed. degree in elementary education. However, application to the M.Ed. degree program should be made at the beginning of elementary post-baccalaureate course work to avoid losing credits for the M.Ed. degree. (See M.Ed. elementary education options requirements.) Candidates who enter the elementary post-baccalaureate licensure program are required to have laptop computers prior to enrolling in ED F344 or F624.

Admission and Application Information

It is recommended that students submit applications before Dec. 15 to provide time to complete prerequisites if necessary. Applications will be reviewed as submitted. Deadline is Feb. 15.

Admission includes meeting both UAF graduate admissions requirements and the School of Education admissions requirements.

Graduate School Requirements:

Submit the following to the UAF Office of Admissions with a copy to the School of Education:

1. UAF Graduate application and fee.
2. Official transcript of bachelor's degree from an accredited institution and official transcripts from all institutions attended. A GPA of at least 3.0 (B grade) in undergraduate degree is required but students with less than a 3.0 may be considered for conditional admission in special circumstances.
3. Graduate Record Examination (GRE) scores if undergraduate GPA is below 3.0.
4. Three letters of reference that address qualifications and potential as a teacher.
5. A vitae/resume.
6. Four-to-five-page essay indicating: reasons for wanting to become a teacher, assessment of academic and personal strengths relative to teaching, future plans and reasons for selecting the elementary post-baccalaureate program.

School of Education Requirements

Submit the following information directly to the School of Education, using School of Education forms:

1. Alaska passing scores from the Praxis I exam in reading, writing and mathematics and score from Praxis II Elementary Content exam (test 0014).
2. Completed academic analysis form to provide information on breadth and depth of prior course work relative to 10 Alaska Student Content Standard areas.
   If additional course work is required, it must be completed prior to beginning the program.
3. Extemporaneous writing sample, autobiography, evidence of technology competence, evidence of successful paid or volunteer teaching/learning experience, evidence of successful cross-cultural experience.
4. Evidence of technology competence through successful completion of ED F237 or by successfully challenging each of the four components of the two-credit course.
5. Completed Alaska Department of Education and Early Development authorization packet (fingerprint cards and criminal background check necessary to work in schools). Packet is available from the School of Education.
6. Some school districts may require interns to submit a physical examination form.

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Program Requirements

1. During the summer semester complete the following graduate level credits; or complete ED F110, F201, F330, F344 and EDSE F482 prior to Aug. 1 of the internship year.
   ED F624—Foundations of Education in Alaska: From Segregation to Standards*.....3
   ED F625—Exceptional Learners and Child Development: Individual and Cultural Characteristics 3
   ED F626—Teaching Reading, Writing and Language Arts.....3
   * *ED F624 meets the state of Alaska requirement for an approved multicultural/cross-cultural communication course.*
2. During the fall semester complete the following:
   ED F411—Reading, Writing, Language Arts: Methods and Curriculum Development.....3
   ED F412W—Integrated Social Studies and Language Arts: Methods and Curriculum Development.....3
   ED F466—Internship and Collaborative Student Teaching 3
   ED F467—Synthesizing the Standards I.....1
   ED F478/F678—Mathematics Methods and Curriculum Development.....2
   ED F479/F688—Science Methods and Curriculum Development.....2
3. During the spring semester complete the following:
   ED F414—Art, Music and Drama in the Elementary Classroom.....2
   ED F417—Physical Education and Health Education for Elementary Teachers.....2
   ED F468O—Internship and Student Teaching.....6
   ED F469—Synthesizing the Standards II 2
4. Minimum credits required.....35

Secondary Post-Baccalaureate Licensure Program toward M.Ed., Secondary Education

Program is offered in Fairbanks and in areas served by the College of Rural and Community Development (CRCD) campuses and their service areas with the exception of the Aleutian-Pribilof Center.

This is an intensive, classroom-based secondary licensure program (31 credits) that prepares post-baccalaureate candidates for secondary (grades 7 – 12) teaching positions. The program is specifically designed to prepare candidates to teach in multicultural settings in Alaska. Content that addresses multicultural issues in general, and Alaska rural issues in particular, is contained specifically in EDSC F657, Multicultural Education and School-Community Relations, and is a fundamental component of the course work within the program. When funding is available, all secondary Fairbanks candidates participate in a rural practicum.

Candidates who apply as graduate applicants may simultaneously pursue teacher licensure and the M.Ed. secondary education degree. Significant additional course work will be required. (See requirements for M.Ed. secondary education option.)

Student outcomes for the program are based on the Standards for Alaska's Teachers located at: www.eed.state.ak.us/standards/pdf/teacher.pdf.

At the end of the program, if students have successfully met all of the program requirements, they will be eligible to apply for an Alaska initial teaching licenses and will receive certificates of completion from UAF.

Candidates who enter the secondary post-baccalaureate licensure program are required to have use of/own laptop computers before they begin their internships in the fall semester of their professional year.

Program Options: Fast Track, Two-Year or Teaching While Training

Fast Track Option
The Fast Track Option is an intensive three-semester program that allows candidates (one year unpaid interns) to complete the secondary licensure program as full-time students in 12 months. Candidates take class "summer-fall-spring." The academic year-long internship is completed during the fall and spring semesters.

Two-Year Option
The Two-Year Option allows candidates (two year unpaid interns) to complete the secondary post-baccalaureate licensure program as part-time students over a period of 18 – 24 months. The last semester of the program requires full-time placement at a public school site.

Teaching While Training Option
The Teaching While Training Option is for candidates (teacher interns) who have secured a teaching position with an Alaskan School District. Generally, this option is available only to those candidates in areas of teacher shortage. Candidates complete the secondary post-baccalaureate licensure program over a period of 24 months.

Admissions Process and Requirements

Admission to the secondary post-baccalaureate licensure program toward an M.Ed. in secondary education includes meeting requirements of the UAF Graduate School and of the School of Education. Candidates take five of the licensure courses at the 600-level.

Submit the following information to the UAF Office of Admissions:

1. UAF graduate application and application fee.
2. Official transcript of bachelor's degree from accredited institution. Applicants who have attended more than one university should include transcripts from all universities.
3. Graduate Record Examination scores if undergraduate GPA is less than 3.0.
4. Three current letters of reference that address qualifications and potential as a teacher.
5. A vitae/resume.
6. A personal statement of 1200 -1500 words explaining your motivation for becoming a teacher. Describe how your academic qualifications and work experiences have prepared you for a career in teaching. Elaborate on personal strengths you possess, including your ability to work collaboratively with others. Describe your experiences with adolescents in instructional and supervisory capacities. Explain why you believe you can help young people of all cultures be successful in school.

Submit the following information to the School of Education:

1. Extemporaneous writing sample.
2. Passing scores from the Alaska Praxis I exam in reading, writing and mathematics.
3. Academic Content Testing
   a. Content area exams: Candidates must submit a score report from the relevant content knowledge Praxis II subject test for each content area the applicant expects to teach. The scores must meet the score set by the State of Alaska (www.eed.state.ak.us/TeacherCertification/pdf/Content_Area_Exams_2008.pdf). In addition, world language applicants must complete the world language exams.
   b. World language exams: Applicants applying to teach a world language are required to submit Praxis II scores in the target language **and** are required to submit scores for the ACTFL Oral

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Proficiency Interview (OPic II) and Writing Proficiency Test (WPI). Applicants must meet the Advanced Low rating for both tests (www.languagetesting.com).

4. Demonstrated evidence of content competency in one of the UAF-approved secondary endorsement areas (www.uaf.edu/educ/secondary/endorsement_areas/).
   a. The applicant holds a degree in an approved UAF secondary endorsement area **or**;
   b. Those applicants who do not hold a degree in the academic content area that they expect to teach, **must** have documentation of content competency reviewed by a secondary program faculty review team prior to application to program. Additional course work may be required to enter the program.
5. Initial content preparation: complete a checklist of each content area you expect to teach (www.uaf.edu/educ/secondary/admissions/).
6. Evidence of competence in use of technology, demonstrated by successful completion of ED F237—Technology Tools, or by passing the School of Education's computer technology competency test. Applicants who have not met this requirement by the beginning of the summer program course work will be required to complete ED F237 during the summer program.
7. Applicants must submit a placement packet; contact the School of Education for specifics. The School of Education determines placement approval, change or termination.
8. All applicants will be required to interview with secondary faculty as part of the admission process.

Application Review Process

Applications are due March 1 and are reviewed thereafter for admission into the summer semester. Applications of outstanding candidates may be considered through spring semester. A candidate may be admitted, not admitted, or admitted with stipulations. Stipulations are specified when additional development in a particular area(s) is needed before beginning a secondary post-baccalaureate program.

The UAF School of Education coordinates the review and evaluation of the candidate's qualifications, professional experiences and academic performance with appropriate academic departments based on the contents of his/her application. The secondary post-baccalaureate program is a selective teacher education program. A comprehensive system including multiple measures is used to assess personal characteristics, communication skills and basic skills of candidates preparing to teach. Multiple assessment measures include a review of transcripts, content area strengths and/or Praxis II scores, personal statement and/or writing proficiency exams, Praxis I and/or GRE exam scores, and letters of reference. A personal interview will be required as part of the admission process.

Upon Acceptance to the Program

The School of Education 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 the program, be advanced to the secondary teaching internship and eventually be recommended for a teaching license. In assessing candidate progress in knowledge, skills and disposition, faculty will review grades, observations, faculty recommendations, demonstrated academic competence and recommendations from the appropriate professionals in the schools. Systematic approaches are used to assist education candidates who are making unsatisfactory progress in their programs, but still maintain potential for successful completion.

The following are specific criteria for entry to the secondary teaching internship:

- successful completion of summer program courses;
- approval of faculty to enter the secondary education internship;
- some school districts may require candidates to pass a general physical exam and require additional shot records; and
- State of Alaska Certificate of Authorization, fingerprint cards and money order in the amount of $66 to the School of Education by June 1 (this fee is non-refundable once submitted to the state of Alaska). The UAF School of Education provides these materials which will then be submitted to the state of Alaska for a criminal background check. Fees are subject to change. These materials will be provided to the student.

Professional Field Experiences

The Secondary Post-Baccalaureate Licensure Program includes a comprehensive internship experience in an educational setting. Internship placements are arranged and supervised by university faculty in partnership with the principal and staff from the public school. University course work and classroom practice are closely linked and communication about performance in both the course work and classroom practice is shared among the partners. Internships follow the K – 12 school year calendar and not the university academic year calendar.

Performance in the internship must meet stated competencies and individual outcomes. Performance evaluations determine the candidate's progress toward meeting the State of Alaska Standards for Alaska's Teacher and the International Society for Technology in Education's National Education Technology Standards and Performance Indicators for All Teachers and performance guidelines of Specialty Performance Organizations.

It is expected that candidates will demonstrate appropriate professional characteristics with respect to their actions, attitudes and performance. Teacher candidates are required to adhere to the characteristics of professionalism as published in the Secondary Post-Baccalaureate Licensure Handbook, and to abide by the State of Alaska Code of Ethics of the Education Profession. Unacceptable academic performance, an unprofessional attitude, unsatisfactory field reports, violation of professional ethics, or other factors that may result in removal from the field experience and denial of the Institutional Recommendation for teacher certification.

Internship placements are made in partnership with participating school districts, which may request additional information and/or preparation from candidates according to the district's established policies and practices. Because cooperating districts also determine the number of placements available for candidates, placement may become competitive if the number of applicants exceeds the number of spaces. Districts also reserve the right to refuse or terminate placements when candidates do not meet a minimum standard of performance. Thus, while the University will make every effort to identify appropriate field experiences, admission to the Secondary Post-Baccalaureate Licensure program does not guarantee and internship placement.

Program Requirements

1. Complete the following for secondary licensure:
   EDSC F402—Methods of Teaching in the Secondary School....3
   EDSC F407—Reading Strategies for Secondary Teachers 3
   EDSC F614—Learning, Development and Special Needs Instruction 3
   EDSC F415—Foundations of Modern Educational Practices ...3
   or EDSC F205—Introduction to Secondary Education.....3

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EDSC F631—Secondary Instruction and Assessment in the Content Area* (3)
or EDSC F632—English/Language Arts Secondary Instruction and Assessment* (3)
or EDSC F633—Mathematics Secondary Instruction and Assessment* (3)
or EDSC F634—Science Secondary Instruction and Assessment* (3)
or EDSC F635—Social Studies Secondary Instruction and Assessment* (3)
or EDSC F636—Art Secondary Instruction and Assessment* (3)
or EDSC F637—World Language Secondary Instruction and Assessment* (3) 3*
EDSC F642—Technology Applications in Education 3
EDSC F657—Multicultural Education and School-Community Relations.....4
EDSC F658—Classroom Organization and Management 3
EDSC F471—Secondary Teaching: School Internship I and Seminar 3
EDSC F472—Secondary Teaching: School Internship II and Seminar 3

2. Minimum credits required 31

* *Candidates must take the section or course that corresponds with their major teaching content areas.*

Special Education K – 12 Post-Baccalaureate Certificate of Completion

Prepares K-12 special educators at the graduate level with specific training in the areas of disabilities, assessment, interventions strategies, current law and the implementation of programs including development of legally defensible federal IDEA documents.

Graduates will have mastery of the Council for Exceptional Children standards for special education teachers: foundations in special education, development and characteristics of learners, individual learning differences, instructional strategies, learning environments and social interactions, communication, instructional planning, assessment, and professional and ethical practice. The program will provide individuals who already possess, or are eligible for, a current Alaska teaching certificate or a bachelor's degree with the necessary prerequisites with specific training in the area of special education. The program prepares K-12 special education teachers who can effectively understand state and national education issues and respond appropriately to those that are specific to Alaska. Special education candidates will progress through a series of developmentally sequenced field experiences for all ages, types and levels of abilities and collaborative opportunities. All those who complete the program will provide evidence of meeting the national Council for Exceptional Children content standards at a beginning special education level.

The program, which shares a strong common core and has the same credit requirements with the special education master of education programs at UAA and UAS, provides development in collaboration/consultation models and program development in multicultural settings. Completion of this program meets requirements for Alaska licensure as a K-12 special education teacher.

Program Requirements

1. Complete the following admission requirements:
   a. Admission requirements for the Master of Education Degree (page 219).
   b. Current teaching certificate and eligibility for a current Alaska teacher certificate or a baccalaureate degree with the following prerequisites:
      i. Current or recent experience (minimum of 12 hours) in an educational setting with children experiencing disabilities with a recommendation from their supervisor.
      ii. Applicants must have completed these courses or comparable transfer courses within the last 5 years:
      ED F201—Introduction to Education
      or EDSE F205—Introduction to Secondary Education
      or EDSE F415—Foundations of Modern Educational Practice
      or EDSE F624—Foundations of Education in Alaska: from Segregation to Standards.....3
      ED F245—Child Development 3
      EDSE F622—Curriculum and Strategies II: High Incidence 3
      iii. An Alaska studies course approved by the Alaska Department of Education and Early Development Office of Teacher Education and Certification.
      iv. A multicultural education/cross-cultural communication course approved by the Alaska Department of Education and Early Development Office of Teacher Education and Certification.
      v. Passing scores on the Praxis I or another test acceptable to the Alaska Department of Education and Early Development before or during the first semester of classes.
      Praxis I: Writing 174; Reading 175; Math 173
      or an average score of 174 with no test score less than 172
      CBEST: 123, no individual score less than 37
      WEST-B: Writing 240; Reading 240; Math 240
      vi. Passing scores on the following Praxis II before or during the first semester of classes.
      0014 Elementary Content Knowledge: Minimum score 143 AND 0041 English Content Knowledge: Minimum score 158 AND/OR 0061 Math Content knowledge: minimum score 116
      vii. All prerequisite courses must be completed with a minimum final grade of "B" in order to progress to the 600-level graduate certification courses. Once the prerequisite courses and testing requirements have been met and the applicants complete the requirements for graduate school admission, applicants will be formally admitted to the special education graduate certification program and can begin taking 600-level courses.
      viii. All students not possessing a current Alaska teacher certificate are required to take 6 credits of clinical practice. Clinical practice courses are taken the last one or two semesters of the program. To enter the clinical practice, students must apply for authorization from the state of Alaska. This includes fingerprinting and a background check. Fingerprint clearance may take up to six months to complete. Submit the clinical practice application two semesters prior to the desired placement. Failure to comply with the requirement, falsification of information, or evidence of a criminal conviction that is named in the law or the Professional Teaching Practices Commission is considered an ethics violation. This will result in denied access to field placement in Alaska school districts. Authorization is required before clinical practice can begin.
2. All applicants (certified and non-certified) must complete the following prerequisite:
   EDSE F482—Inclusive Classroom for All Children
   or have a comparable transfer course from another institution in the last 5 years 3
3. Complete the general university requirements (page 198).
4. Complete the M.Ed. degree requirements (page 204).
5. Complete the following course requirements:
   EDSE F610—Assessment of Students with Disabilities 3
   EDSE F612—Curriculum and Strategies I: Low Incidence.....3

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EDSE F622—Curriculum and Strategies II: High Incidence.....3
EDSE F632—Special Education Law: Principles and Practices.....3

6. Complete one of the following:
   EDSE F625—Teaching Mathematics to Special Learners (3)
   or EDSE F605—Early Childhood Special Education (3)
   or EDSE F677—Reading Assessment, Curriculum, and Strategies 3
7. Complete one of the following:
   EDSE F624—Social/Emotional Development, Assessment and Intervention(3)
   or EDSE F633—Autism: Communication and Social Disorders (3)
   or EDSE F640—Collaboration and Consultative Methods (3)
   or EDSE F642—Autism and Asperger Syndrome: Social and Behavioral Issues (3).....3
8. Complete the following courses:
   EDSE F680—Clinical Practice (3 credits Alaska certified or 6 credits uncertified*).....3 – 6
   EDSE F681—Special Education Portfolio** 3
9. Minimum credits required*** .....24 – 27

* *Additional fee required. Charges are added to fee statements every semester.*

** *Students pursuing a K-12 Special Education certificate must complete a Clinical Practice and Portfolio in a public school setting.*

*** *24 credits with Alaska Teacher licensure, 27 without Alaska Teacher licensure.*

Note: The Alaska Department of Education and Early Development also requires that the Praxis II elementary or Content Knowledge #0014 or the Praxis II in the content area for secondary candidates be passed before they will issue a professional teaching certificate. We recommend having 0041 English Content Knowledge or 0061 Math Content Knowledge as a prerequisite completed by the first semester of enrollment. Districts would prefer candidates have both 0041 and 0061 for teaching core classes for students who qualify for special education at the secondary level.

M.Ed. Degree

Students may earn an M.Ed. in these areas of specialization: cross-cultural education, curriculum and instruction, language and literacy, elementary education, secondary education, counseling and special education. For elementary education, secondary education and counseling majors refer to specific admission and program requirements listed in the respective sections of the catalog.

Admission requirements

Applications will be reviewed on March 1 and Oct. 1 for admission in the following semester. Faculty may vote to admit, not admit or admit with stipulations. Stipulations are specified when additional development in particular areas is needed before beginning a graduate degree program.*

The master of education in counseling program reviews applications on March 1 only.

Minimum requirements for admission to the M.Ed. program are:

1. Bachelor's degree and a 3.0 GPA.
2. One year of satisfactory teaching or administrative experience. Alternative experience may be accepted.

Complete the following application procedures for the UAF Graduate School:

1. Submit a graduate application form to the UAF Office of Admissions.
2. Submit scores on the general Graduate Record Examination if undergraduate GPA is below 3.0.
3. Submit a four-five page essay which describes your career goals and educational philosophy, and how those goals and philosophy are relevant to the School of Education's mission and education graduate degree program.
4. Submit official transcripts.
5. Submit three letters of reference.
6. Submit a resume.

Master of Education in Counseling

Students may earn an M.Ed. degree in counseling with specialization in school or community counseling. Refer to the counseling program section of this catalog for more information.

Master of Education in Cross-Cultural Education

Program Requirements

1. Complete the general university requirements (page 198).
2. Complete M.Ed. degree requirements (page 204).
3. Complete the admission requirements for the Master of Education Degree.
4. Complete the following course requirements:
   ED F601—Introduction to Applied Social Science Research (3)
   or CCS F601—Documenting Indigenous Knowledge Systems 3
   ED/CCS F603—Field Study Research Methods 3
   ED F698—Research (6)
   or ED F699—Thesis 6
5. Complete one of the following cross-cultural foundations with Focus on Alaska Context Courses:
   ED/CCS F610—Education and Cultural Processes.....3
   ED/CCS F611—Culture, Cognition and Knowledge Acquisition.....3
   ED F616—Education and Socioeconomic Change 3
   ED F620—Language, Literacy and Learning.....3
   ED/LING F621—Cultural Aspects of Language Acquisition 3
   ED F631—Small Schools Curriculum Design.....3
   ED F669—Reading Language and Culture.....3
6. Complete at least 15 credits of approved electives in cross cultural education in consultation with the student's graduate advisory committee.....15
7. Minimum credits required.....30

Master of Education in Curriculum and Instruction

Program Requirements

1. Complete the general university requirements (page 198).
2. Complete M.Ed. degree requirements (page 204).
3. Complete the admissions requirements for the Master of Education degree.
4. Complete the following course requirements:
   ED F601—Introduction to Applied Social Science Research 3
   ED/CCS F603—Field Study Research Methods 3
   ED F612—Foundations of Education 3
   ED F630—Curriculum Development.....3
   ED F659—Multimedia Tools for Teachers.....3
   ED F686—Assessment and Testing in K – 12 School.....3
   ED F698—Research (6)
   or ED F699—Thesis 6
5. Complete one of the following cross-cultural foundations with focus on Alaska context courses:
   ED/CCS F610—Education and Cultural Processes.....3
   ED/CCS F611—Culture, Cognition and Knowledge Acquisition.....3
   ED F616—Education and Socioeconomic Change 3

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ED F620—Language, Literacy and Learning.....3
ED/LING F621—Cultural Aspects of Language Acquisition 3
ED F631—Small Schools Curriculum Design.....3
ED F669—Reading Language and Culture.....3

6. Complete one F600-level education elective course 3
7. Minimum credits required.....30

Master of Education in Elementary Education

Following completion of the year-long UAF, post-baccalaureate elementary licensure program, students can pursue a M.Ed. degree in elementary education if they choose to do so. Thirteen specified graduate credits from the elementary licensure program can be used to meet the M.Ed. elementary education requirements. Courses are available through UAF by distance delivery and on the Fairbanks campus. Students can enroll in courses throughout the year. Licensure and the master's degree requirements must be met within seven years of the beginning of the program.

Students who have completed undergraduate courses 110, 201, 330, 410 and EDSE F482 as part of their licensure program must complete additional graduate level course work to receive a master's degree. Please contact the School of Education Student Services Office for additional information.

Program Requirements

1. Complete the general university requirements (page 198).
2. Complete M.Ed. degree requirements (page 204).
3. Complete the admission requirements for the graduate-level elementary post-baccalaureate licensure program.
4. Complete the following course requirements:
   ED F624—Foundations of Education in Alaska: From Segregation to Standards.....3
   ED F625—Exceptional Learners and Child Development: Individual and Cultural Characteristics 3
   ED F626—Teaching Reading, Writing, and Language Arts.....3
   ED F678—Mathematics Methods and Curriculum Development.....2
   ED F688—Science Methods and Curriculum Development.....2
   ED F601—Introduction to Applied Social Science Research (3)
   or CCS F601—Documenting Indigenous Knowledge Systems (3).....3
   ED/CCS F603—Field Study Research Methods 3
   ED F698—Research (6)
   or ED F699—Thesis 6
5. Complete two graduate-level elective courses approved by candidate's graduate committee.....6
6. Minimum credits required.....30

Master of Education in Language and Literacy

Program Requirements

1. Complete the general university requirements (page 198).
2. Complete M.Ed. degree requirements (page 204).
3. Complete the admission requirements for the Master of Education degree.
4. Complete the following:
   ED F601—Introduction to Applied Social Science Research (3)
   or CCS F601—Documenting Indigenous Knowledge Systems 3
   ED/CCS F603—Field Study Research Methods 3
   LING F602—Second Language Acquisition.....3
   LING F610—Theory and Methods of Second Language Learning.....3
   ED F669—Reading Language and Culture.....3
   ED F698—Research (6)
   or ED F699—Thesis 6
5. Complete one of the following cross-cultural foundations with Focus on Alaska Context Courses:
   ED/CCS F610—Education and Cultural Processes.....3
   ED/CCS F611—Culture, Cognition and Knowledge Acquisition.....3
   ED F616—Education and Socioeconomic Change 3
   ED F620—Language, Literacy and Learning.....3
   ED/LING F621—Cultural Aspects of Language Acquisition 3
   ED F631—Small Schools Curriculum Design.....3
6. Complete two F600-level education elective courses.....6
7. Minimum credits required.....30

Master of Education in Secondary Education

Following the completion of the year-long UAF secondary post-baccalaureate licensure program, students can pursue an M.Ed. degree in secondary education.

This program is designed to expand the preparation and instructional practices of middle and secondary educators and education professionals. Fifteen graduate-level credits from the UAF Secondary Post-Baccalaureate Licensure program may be applied toward the M.Ed. in secondary education program. Courses are available through UAF by distance-delivery and on the Fairbanks campus. Master's degree requirements must be met within seven years of beginning the program.

Program Requirements

1. Complete the general university requirements (page 198).
2. Complete the M.Ed. degree requirements (page 204).
3. Complete the admission requirements for the graduate-level secondary post-baccalaureate licensure program.
4. Complete the following course requirements:
   EDSC F614—Learning, Development and Special Needs Instructions.....3
   EDSC F631—Secondary Instruction and Assessment in the Content Area (3)
   or EDSC F632—English/Language Arts Secondary Instruction and Assessment (3)
   or EDSC F633—Mathematics Secondary Instruction and Assessment (3)
   or EDSC F634—Science Secondary Instruction and Assessment (3)
   or EDSC F635—Social Studies Secondary Instruction and Assessment (3)
   or EDSC F636—Art Secondary Instruction and Assessment (3)
   or EDSC F637—World Language Secondary Instruction and Assessment.....3
   EDSC F642—Teaching with Technology.....3
   EDSC F657—Multicultural Education and School-Community Relations 4
   EDSC F658—Classroom Organization and Management 3
   CCS F601—Documenting Indigenous Knowledge Systems (3)
   or ED F601—Introduction to Applied Social Science Research 3
5. Complete the following for the thesis option:
   ED/CCS F603—Field Study Research Methods 3
   ED F699—Thesis.....6
   Complete one graduate-level elective course approved by the candidate's graduate committee.....3
6. Complete the following for the Project option:
   ED/CCS F603—Field Study Research Methods 3

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ED F698—Project.....6
Complete one graduate-level elective course approved by the candidate's graduate committee.....3

7. Complete the following for the Comprehensive Exam option:
Twelve graduate-level elective credits approved by candidate's graduate committee 12
Comprehensive Examination

8. Minimum credits required.....31

Master of Education in Special Education

Prepares K-12 special educators at the graduate level with specific training in the areas of disabilities, assessment, interventions strategies, current law and the implementation of programs including development of legally defensible federal IDEA documents. Graduates will have mastery of the Council for Exceptional Children standards for special education teachers: foundations in special education, development and characteristics of learners, individual learning differences, instructional strategies, learning environments and social interactions, communication, instructional planning, assessment, and professional and ethical practice.

The program will provide individuals who already possess, or are eligible for, a current Alaska teaching certificate or a bachelor's degree with the necessary prerequisites with specific training in the area of special education. The program prepares K-12 special education teachers who can effectively understand state and national education issues and respond appropriately to those that are specific to Alaska. Special education candidates will progress through a series of developmentally sequenced field experiences for all ages, types and levels of abilities and collaborative opportunities. All those who complete the program will provide evidence of being able to meet the national Council for Exceptional Children content standards at a beginning Special Education teacher level.

The program, which shares a strong common core and the same credit requirements with the special education M.Ed. programs at UAA and UAS, provides development in collaboration/consultation models and program development in multicultural settings. Completion of this program meets requirements for Alaska licensure as a K-12 special education teacher.

Program Requirements

1. Complete the following admission requirements:
   a. Admission requirements for the master of education degree.
   b. Current teaching certificate and eligibility for a current Alaska teacher certificate or a Baccalaureate degree with the following prerequisites:
      i. Current of recent experience (minimum of 12 hours) in an educational setting with children experiencing disabilities with a recommendation from their supervisor.
      ii. Applicants must have these courses or comparable transfer courses to the following within the last 5 years:
      iii. ED F245—Child Development 3
      ED F201—Introduction to Education (3)
      or EDSC F205—Introduction to Secondary Education (3)
      or EDSC F415—Foundations of Modern Educational Practice (3)
      or ED F624—Foundations of Education in Alaska: From Segregation to Standards 3
      iv. An Alaska studies course approved by the Alaska Department of Education and Early Development Office of Teacher Education and Certification.
      v. A multicultural education/cross-cultural communication course approved by the Alaska Department of Education and Early Development Office of Teacher Education and Certification.
      vi. Passing scores on the Praxis I or another test acceptable to the Alaska Department of Education and Early Development before or during the first semester of classes. Acceptable scores are:
      Praxis I—Writing 174; Reading 175; Math 173
      CBEST: 123, no individual score less than 37
      WEST-B: Writing 240, Reading 240, Math 240
      Passing score on the following Praxis II before or during the first semester of classes:
      0014—Elementary Content Knowledge: Minimum score 143
      and 0041 English Content Knowledge: Minimum score 158
      and/or 0061 Math Content Knowledge: Minimum score 116

2. All prerequisite courses must be completed with a minimum final grade of "B" in order to progress to the 600-level graduate certification courses. Once the prerequisite courses and testing requirements have been met, and the applicants complete the requirements of graduate school admission, applicants will be formally admitted to the special education graduate certification program and can begin taking 600-level courses

3. All students not possessing a current Alaska teacher certificate are required to take six credits of clinical practice. Clinical practice courses are taken the last one or two semesters of the program. To enter the clinical practice, students must apply for authorization from the state of Alaska. This includes fingerprinting and a background check. Fingerprint clearance may take up to six months to complete. Submit the clinical practice application two semesters prior to the desired placement. Failure to comply with the requirement, falsification of information, or evidence of a criminal conviction that is named in the law or the Professional Teaching Practices Commission (PTPC) is considered an ethics violation. This will result in denied access to field placement in Alaska school districts. Authorization is required before clinical practice can begin.
   a. All applicants (certified and non-certified) must complete the following prerequisite:
      EDSE F482—Inclusive Classroom for All Children
      or have a comparable transfer course from another institution in the last 5 years 3

4. Complete the general university requirements (page 198).

5. Complete the M.Ed. degree requirements (page 204).

6. Complete the following:
EDSE F610—Assessment of Students with Disabilities 3
EDSE F612—Curriculum and Strategies I: Low Incidence.....3
EDSE F622—Curriculum and Strategies II: High Incidence.....3
EDSE F632—Special Education Law: Principles and Practices.....3

7. Complete two of the following:
EDSE F625—Teaching Mathematics to Special Learners (3)
or EDSE F605—Early Childhood Special Education (3)
or EDSE F677—Reading Assessment, Curriculum, and Strategies 3

8. Complete two of the following:
EDSE F624—Social/Emotional Development, Assessment and Intervention(3)
or EDSE F633—Autism: Communication and Social Disorders (3)
or EDSE F640—Collaboration and Consultative Methods (3)
or EDSE F642—Autism and Asperger Syndrome: Social and Behavioral Issues (3).....3

9. Complete the following courses:
EDSE F680—Clinical Practice (3 credits Alaska certified or 6 credits uncertified*)..... 3-6
EDSE F681—Special Education Portfolio** 3

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EDSE F601—Introduction to Applied Social Science Research 3
EDSE F603—Field Study Research Methods 3

10. Minimum credits required*** 36

* *Additional fee required. Charges are added to fee statements every semester..*

** *Students pursuing a K-12 Special Education certificate must complete a Clinical Practice and Portfolio in a public school setting.*

*** *36 credits with Alaska Teacher licensure 39 without Alaska Teacher licensure.*

Note: DEED also requires that the Praxis II elementary or Content Knowledge #0014 or the Praxis II in the content area for secondary candidates be passed before they will issue a professional teaching certificate. We recommend having 0041 English Content Knowledge or 0061 Math Content Knowledge as a prerequisite completed by the first semester of enrollment. Districts would prefer candidates have both 0041 and 0061 for teaching core classes for students who qualify for special education at the secondary level.

Educational Leadership

The Master of Education in educational leadership is a statewide program offered through the University of Alaska Anchorage (UAA) for more information see the following website: http://coe.uaa.alaska.edu/programs/leadership/.

Interdisciplinary Ph.D. Degree

Students wishing to further their education beyond a master of education degree may pursue an interdisciplinary Ph.D. degree. For more information, refer to the program section on interdisciplinary studies — Ph.D. degree.

ELECTRICAL ENGINEERING

College of Engineering and Mines
Department of Electrical and Computer Engineering
907-474-7137
www.uaf.edu/cem/ece/

M.E.E., M.S. Degrees

Minimum Requirements for Degrees: M.E.E.: 32 credits; M.S.: 30 credits

The M.E.E. degree program, designed for the practicing professional engineer, focuses on a major project. The M.S. degree includes a written thesis and oral defense for those students interested in research and development. UAF offers an engineering Ph.D. program for students with an approved curriculum. Capable students with undergraduate degrees in physics, mathematics or related sciences, as well as in various branches of engineering, may also be admitted for graduate study. A student with adequate background can usually complete M.S. requirements within two academic years and a Ph.D. in another three academic years.

Graduate degree programs in electrical and computer engineering are closely connected with research activities of the faculty. The main areas of research include communications, radar, lidar and sonar remote sensing, instrumentation and microwave circuit design, electric power and energy systems, digital and computer engineering, nanotechnology, controls and robotics. Current research topics include high latitude satellite communications, rocket telemetry, radio wave propagation, ultra wide band wireless communications, electromagnetic and acoustic wave propagation, remote biomedical and environmental instrumentation, microwave design, digital signal processing, digital and physical electronics, computer applications, remote hybrid electric power systems, electric power system design and analyses, electric power quality improvement, system identification, simulation, computer-controlled systems, control theory, robotics and automation.

A number of on- and off-campus research facilities are available to students. Satellite, rocket and ground-based communication studies are carried out both on campus and at Poker Flat Research Range. The Sounding Rocket Laboratory provides opportunities for developing instrumentation for sounding rocket payloads launched from Poker Flat Research Range — the only university-operated rocket range in the world. The Arctic Region Supercomputing Center on campus provides a wide array of tools for digital system research. The department also has a variety of research laboratories available, including microwave, wireless communications, ultra wide band technology, waves, power electronics/robotics, instrumentation and digital laboratories.

Alaska's environment and remote location provide unique opportunities for research in a wide range of areas, such as the use of acoustic, light and radio wave techniques for measuring fish in Alaskan rivers to the geophysical properties of the aurora. Remote sensing for biomedical (animal tracking) and environmental (ground water and air monitoring) applications is an important research area for Alaska. Electric power systems research includes issues related to isolated rural Alaskan communities, analysis of larger interconnected generation, transmission and distribution systems serving major Alaskan population centers, and the use of alternative energy systems.

Graduate students in electrical and computer engineering at UAF receive the highest quality, contemporary education available at the graduate level and perform research appropriate to the technical needs of the state of Alaska, the nation and the world.

Graduate Program — M.E.E. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete one of the following admission requirements:
   a. Complete a bachelor's degree in electrical engineering.
   b. Students with bachelor's degrees in other fields should work out a program to address any background deficiencies with their graduate committee.
3. Complete the general university requirements (page 198).
4. Complete the master's degree requirements (page 202).
5. Complete 32 credits.*
6. Minimum credits required 32

* *At least 26 credits must be at the F600-level. A research project is not required, although up to 6 credit hours of research may be completed as part of the degree program. If a research project is part of the degree program, an oral project presentation and defense is required.*

Graduate Program — M.S. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete one of the following admission requirements:
   a. Complete a bachelor's degree in electrical engineering.
   b. Students with bachelor's degrees in other fields should work out a program to address any background deficiencies with their graduate committee.
3. Complete the general university requirements (page 198).
4. Complete the master's degree requirements (page 202).
5. Minimum credits required 30*
   See Engineering for Ph.D. program.

* *At least 24 credits must be at the F600-level.*

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ENGINEERING

College of Engineering and Mines
907-474-7241
www.uaf.edu/cem/

Ph.D. Degree

Minimum Requirements for Degree: 36 credits

Engineers use knowledge of the mathematical and natural sciences to develop economical uses of materials and forces of nature for human benefit. The professional practice of engineering requires sophisticated skills, use of judgment and exercise of discretion. The basic education necessary for the professional practice of engineering is provided by the engineering bachelor and master's degrees. Doctoral-level education requires independent research that generates fundamental advances in technology and discovers new knowledge for the benefit of society. Engineering Ph.D. degrees provide leadership in scientific research, academia and industrial research and development. The Ph.D. degree in engineering draws on the combined strength of the College of Engineering and Mines and offers opportunities for engineers at other UA campuses to participate.

Graduate Program — Ph.D. Degree

Concentrations: Arctic, Civil, Computer, Electrical, Engineering Management, Environmental, Geological, Mechanical, Mining and Petroleum

1. Complete the following admissions requirements:
   a. Complete either a B.S. or M.S. degree in engineering.
   b. Complete a master's degree in engineering or a closely related field.
   c. Submit GRE scores.
2. Complete the general university requirements (page 198).
3. Complete the Ph.D. degree requirements (page 203).
4. As part of the Ph.D. degree requirements, complete the following:
   a. Complete at least 18 credits of course work beyond the M.S. degree.
   b. Complete at least three full-time semesters of residency, which may include a summer semester. Residency is defined as living in the Fairbanks area, working with the student's graduate advisor and graduate committee, while taking courses at UAF.
   c. Complete and pass a written and oral comprehensive examination.
   d. Complete and submit a written thesis proposal for approval.
   e. Complete a research program as arranged with the graduate advisory committee.
   f. Complete a thesis that is a substantial contribution to the body of knowledge in engineering and pass an oral defense of thesis.
5. Minimum credits required.....36

ENGINEERING MANAGEMENT

College of Engineering and Mines
Department of Civil and Environmental Engineering
907-474-7241
www.uaf.edu/esm/

M.S. Degree

Minimum Requirements for Degree: 30 credits

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

Graduate Program — M.S. Degree

1. Complete the following admission requirements and recommendations:
   a. Complete a bachelor's degree in an engineering discipline.
   b. On-the-job experience in engineering is recommended.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Present project reports which provide comprehensive analysis and propose solutions to a situation in an engineering or scientific management setting. Pass an oral comprehensive examination.
5. Complete courses from the four main engineering management subject areas as follows:
   a. Human Element (two courses required)
      ESM F601—Managing and Leading Engineering Organizations.....3
      BA F607—Human Resources Management.....3
   b. Project Management (two courses required)
      ESM F609—Project Management (3)
      or ESM F608—Legal Principles for Engineering Management (3)
      or CE F620—Civil Engineering Construction (3) 6
   c. Quantitative Methods (one course required)
      ESM F622—Engineering Decisions (3)
      or ESM F620—Statistics for ESM (3)
      or ESM F621—Operations Research (3) 3
   d. Financial (two courses required)
      ACCT F602—Accounting for Managers 3
      ESM F605—Engineering Economic Analysis*.....3
6. Complete the following:
   ESM F684—Engineering/Science Management Project 3
7. Minimum credits required.....30

* *May be waived with prior undergraduate engineering economics course.*

Note: Balance of credits may be managerial or technical electives as approved by the student's graduate advisory committee.

See Arctic Engineering.
See Civil Engineering.
See Engineering for Ph.D. program.
See Environmental Engineering and Environmental Quality Science.
See Science Management.

ENGLISH

College of Liberal Arts
Department of English
907-474-7193
www.uaf.edu/english/

M.A., M.F.A., M.F.A./M.A. Degrees

Minimum Requirements for Degrees: M.A.: 30 – 36 credits; M.F.A.: 45 credits; M.F.A./M.A.: 45 credits

The English department offers core courses in writing and literature, and upper-division courses in literature, linguistics, creative writing, technical writing and literary criticism. The department also offers a two-year M.A. degree in literature, a three-year M.F.A. degree in creative writing and an M.F.A./M.A. combined degree in creative writing and literature that can be completed in three years. Teaching assistantships are available for the three programs. The M.A. degree offers

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advanced study of literature and literary theory, as preparation for teaching or for entering a Ph.D. program. The M.F.A. degree is a terminal degree, culminating in the production of a publication-quality thesis manuscript of poetry, fiction, drama or creative non-fiction. The M.F.A./M.A. is a combined degree designed for qualified individuals who wish to produce a publication-quality thesis manuscript of creative writing, but also would like to pursue in a systematic manner the study of literature and literary theory in preparation for college teaching or entering a Ph.D. program.

Graduate Program — M.A. Degree

1. Complete the following admission requirements:
   a. Submit GRE scores.
   b. Submit academic writing sample.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Pass a written comprehensive examination based on a standardized reading list; the examination is to be taken in the student's second year of work. The examination will be held on the Saturday ending the fourth full week of classes in the spring semester.
5. Students may advance to candidacy when their advisory committee deems that they have made satisfactory progress toward completion of their degree.
6. Pass an oral defense of the thesis or non-thesis project.
7. Complete the thesis or non-thesis requirement:

Thesis

   a. Complete the following:
   ENGL F601—Bibliography, Methods and Criticism 3
   Students are required to take ENGL F601 in their first year of study.
   ENGL F685—Teaching College Composition (3)*
   or ENGL F600-level elective course (3) 3
   b. Complete the following:
   ENGL F699—Thesis.....6
   ENGL electives**.....18
   c. Complete three of the following electives:
   ENGL F603—Studies in British Literature: Old and Middle English.....3
   ENGL F604—Studies in British Literature: Renaissance and 17th Century.....3
   ENGL F606—Studies in British Literature: Restoration and 18th Century.....3
   ENGL F607—Studies in British Literature: 19th Century 3
   d. Complete one of the following electives:
   ENGL F609—Early and Romantic American Literature.....3
   ENGL F611—American Realism and Modernism.....3
   ENGL F612—Twentieth Century American Literature.....3
   e. Complete one of the following electives:
   ENGL F608—Studies in British Literature after 1900.....3
   ENGL F614—Studies in Comparative Literature.....3
   ENGL F615—Contemporary Literature.....3
   f. Pass an oral defense of the thesis.
   g. Minimum credits required.....30

Non-Thesis

   a. Complete the following:
   Complete required courses and distribution of electives in a, c, d and e in the thesis option. 21
   Complete additional approved ENGL F600-level electives.....9
   Complete ENGL F698—Research (maximum).....6
   Complete a research paper which the advisory committee judges to be of publishable quality.
   Pass an oral defense of the project
   b. Minimum credits required.....36

* *Recommended if you are a teaching assistant or planning to teach.*

** *To maximize breadth of study, M.A. students and their advisors will draft individualized courses of study with the following program requirements in mind. The advisor will direct students to courses covering the required areas, subject to particular exemptions based upon undergraduate course work. Exemptions and any subsequent revisions of the course of study must have the agreement of the advisor and department head. Plans can be revised to substitute an appropriate seminar for one of the courses.*

Note: Students may apply up to 3 credit hours of independent study toward the English M.A. degree requirements.

Graduate Program — Creative Writing, M.F.A. Degree

1. Complete the following admission requirements:
   a. Submit GRE scores.
   b. Submit creative writing sample.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Complete and pass a written comprehensive examination, based on a standardized reading list; examination to be taken no later than student's fourth semester of work. Examination will be held on the Saturday ending the fourth full week of classes in the spring semester.
5. Students may advance to candidacy when their advisory committee deems that they have made satisfactory progress in both academic and writing areas.
6. Complete the following:
   ENGL F601—Bibliography, Methods and Criticism 3
   Students are required to take ENGL F601 in their first year of study.
   ENGL F671—Writers' Workshop.....9
   ENGL F685—Teaching College Composition (3)*
   or ENGL elective course F600-level (3) 3
   ENGL F699—Thesis.....6
   ENGL approved electives.....6
   Literature seminars** 12
7. Complete two of the following:
   ENGL F681—Forms of Poetry 3
   ENGL F682—Forms of Fiction 3
   ENGL F684—Forms of Non-Fiction Prose 3
8. Minimum credits required.....45

* *Recommended if you are a teaching assistant or planning to teach.*

** *Minimum of four to be determined by student's advisory committee. A literature class is one that does not have as its primary purpose the training of a student to be a creative writer or to teach composition. The following English courses are considered those that meet the literature-seminar requirement for the MFA degree: ENGL F603, F604, F606, F607, F608, F609, F611, F612, F614, F615, F620 and versions of F692 and F693 that meet the above criteria.*

Note: A student may petition the Thesis Advisory Committee and the Department Chair to take up to 6 credit hours of Independent Study to be applied toward the English MFA electives requirement. Note: The English department requires that a student receive an A or B grade for all F600-level courses that the student wishes to apply toward the master's degree programs.

Graduate Program — M.F.A./M.A. Combined Degree in Creative Writing and Literature

1. A student who wishes to be awarded an M.F.A./M.A. combined degree in creative writing and literature must be admitted to both programs;
2. Fulfill all general university requirements and master's degree requirements and all course requirements within both programs (double counting allowed);
3. Pass comprehensive examinations in both programs;

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4. Complete a thesis required for an M.F.A. degree and
   a. a thesis required for an M.A. degree,
   b. OR a scholarly essay which from a critical and/or historical perspective supplements the M.F.A. thesis and which the advisory committee(s) must judge to be of publishable quality,
   c. OR a scholarly essay on a topic approved by the advisory committee(s) and likewise judged as publishable.
5. Pass an oral examination of materials submitted from 4 above.
6. Finish all requirements in order to be awarded the combined degree instead of the M.A. or M.F.A. separately (i.e., a student may not claim at any time more than one degree for the same work).

ENVIRONMENTAL CHEMISTRY

College of Natural Science and Mathematics
Department of Chemistry and Biochemistry
907-474-5510
www.uaf.edu/chem/

M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits; Ph.D.: 18 thesis credits

Environmental Chemistry is a diverse and highly interdisciplinary field that focus on the chemical processes influencing the composition and chemical speciation of natural systems (air, water and soils), the chemical fate and mobility of contaminants in the environment, chemical processes that affect the toxicity and bioavailability of contaminants and chemical aspects of contaminant remediation and pollution prevention (green chemistry). The common link to all these areas of study is a focus on the underlying chemical structure, reactivity and mechanisms that dictate the extent and rates of environmentally important chemical reactions. Environmental chemistry is a challenging field, requiring core training in physical, analytical, organic and inorganic chemistry and an understanding of how these disciplines can be applied to complex environmental systems. It is also a highly rewarding discipline, as it provides a quantitative and fundamental approach to understanding the processes that influence the quality of the environment we live and work in.

The UAF Department of Chemistry and Biochemistry offers B.S., M.S. and Ph.D. degrees in Environmental Chemistry. The program provides education and research opportunities focused on the molecular scale aspects of Environmental Science. Our faculty are involved in a wide range of projects from field studies of chemical transformation and transport, to laboratory and modeling studies of the basic mechanisms of environmental reactions, to the development of novel chemistry useful in contaminant remediation. The program is centered in the Natural Sciences Building on the UAF campus that houses state-of-the-art classrooms, laboratories and computer facilities to support education and research activities. Located in the "Heart of Alaska," UAF is home to numerous research institutes and centers that focus on Arctic science and engineering and provide great opportunities for collaboration and cross-disciplinary studies focused on the chemistry of polar and sub-arctic systems.

The graduate program in Environmental Chemistry provides advanced training in the concepts and methods of Molecular Environmental Sciences. The M.S. degree prepares students for careers in the Environmental Science and Technology sector as a specialist in the analysis and interpretation of Environmental Chemical data and/or for more advanced studies in Environmental Chemistry or related disciplines. The requirement of a Masters Thesis provides an opportunity for students to gain expertise in a particular sub-discipline and, more importantly, gain experience in research methods, presentation skills and critical thinking. The Ph.D. provides advanced training beyond the level of a Masters degree with the expectation that Ph.D. recipients will be acknowledged as experts in their particular topic of study. This is accomplished primarily through the Ph.D. thesis, which is a body of independent research that presents new findings on forefront topics related to molecular processes in the environment. The Ph.D. degree in Environmental Chemistry prepares students for careers in academia or the public and private research sectors. Graduate (M.S. and Ph.D.) students in the Environmental Chemistry program are typically supported through teaching and research assistantships or fellowships.

Graduate Program — M.S. Degree

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete the following environmental core courses:
   CHEM F605—Aquatic Chemistry 3
   CHEM F606—Atmospheric Chemistry 3
   CHEM F631—Environmental Fate and Transport 3
4. Complete two seminar courses
   CHEM F691—Research Presentation Techniques 1
   CHEM F692—Seminar 1
5. Approved electives ..... 3 – 6*
6. Complete a thesis 12
7. Minimum credits required ..... 30 – 33

Graduate Program — Ph.D. Degree

1. Complete the general university requirements (page 198).
2. Complete the Ph.D. degree requirements (page 203).
3. Complete the following environmental core courses:
   CHEM F605—Aquatic Chemistry 3
   CHEM F606—Atmospheric Chemistry 3
   CHEM F631—Environmental Fate and Transport 3
4. Complete two seminar courses.
   CHEM F691—Research Presentation Techniques 1
   CHEM F692—Seminar 1
5. Approved electives ..... 3 – 6*
6. Complete a thesis 18
7. Minimum credits required ..... 32 – 35

See Biochemistry and Molecular Biology.
See Chemistry.

* *Approved electives (both M.S. and Ph.D.)*

Note: Students in the atmospheric focus area should also take CHEM F601—Fundamentals of Atmospheric Science. Students in the terrestrial/aquatic focus area should also take GEOS F618—Introduction to Geochemistry and CHEM F609/GEOS F633—Environmental Geochemistry. Additional course work requirements may be specified by the students committee.

ENVIRONMENTAL ENGINEERING AND ENVIRONMENTAL QUALITY SCIENCE

College of Engineering and Mines
Department of Civil and Environmental Engineering
907-474-6129
www.uaf.edu/cem/cee/env/

M.S. Degree

Minimum Requirements for Degree: 30 credits

The environmental engineering and environmental quality science program offers an M.S. degree in environmental engineering for engineers and an M.S. degree in environmental quality science for scientists.

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Career opportunities for graduates include water supply, treatment and distribution, waste treatment, water and air pollution, solid waste disposal, hazardous and toxic waste management, pollution prevention, environmental impact evaluation, administration of environmental programs and regulatory compliance. Graduates are prepared to hold positions in government, industry, consulting or academia.

Graduate Program — Environmental Engineering, M.S. Degree

1. Complete the following admission requirements:
   a. Complete the equivalent of a UAF course in basic computer techniques.
   b. Complete the TOEFL exam (only required of non-native English speakers. The minimum score required is 575 for the paper test, or 213 for the computerized test).
   c. Complete a B.S. in engineering from an ABET accredited institution with a GPA of 3.0 or higher.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Complete the thesis or non-thesis requirements for one of the environmental engineering and environmental quality science concentration areas listed below.

Graduate Program — Environmental Quality Science, M.S. Degree

1. Complete the following admission requirements:
   a. Complete the equivalent of one year of UAF courses in calculus and general chemistry, and one semester of computer techniques.
   b. Complete the TOEFL exam (only non-native English speakers, the minimum score required is 575 for the paper test, or 213 for the computerized test).
   c. Complete a B.S. in science from an accredited institution with a GPA of 3.0 or higher.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Complete the thesis or non-thesis requirements for one of the environmental engineering and environmental quality science concentration areas listed below.

Concentrations for Environmental Engineering and Environmental Quality Science: Environmental Contaminants, Environmental Science and Management, Water Supply and Waste Treatment

Environmental Contaminants

a. Complete the following
- CE F663—Groundwater Dynamics....3
- ENVE F641—Aquatic Chemistry....3
- ENVE F642—Contaminant Hydrology....3
- ENVE F647—Biotechnology....3
- ENVE F649—Hazardous and Toxic Waste Management....3
- ENVE F650—Seminar* (1)....2
- ENVE F653—Measurements Laboratory....1
- ENVE F698—Project (3) or ENVE F699—Thesis....6
- Approved electives**....6 – 9

b. Minimum credits required....30

** Complete two semesters at 1 credit each.*
*** Electives as approved by the student's committee (6 credits for thesis option; 9 credits for project option).*
Note: In addition to the courses listed in any of the concentration areas, electives include but are not limited to: BIOL F642, F680, F682, F685; CE F603, F661, F683, F684; CHEM F631, F655; ENVE F658; GE F620; MATH F608, F615.

Environmental Science and Management

a. Complete five of the following courses
- ENVE F641—Aquatic Chemistry....3
- ENVE F644—Environmental Management and Law....3
- ENVE F647—Biotechnology....3
- ENVE F649—Hazardous and Toxic Waste Management....3
- ENVE F651—Environmental Risk Assessment....3
- ENVE F652—Toxicology for Engineers and Scientists....3

b. Complete the following
- ENVE F650—Seminar* (1)....2
- ENVE F653—Measurements Laboratory....1
- ENVE F698—Project (3) or ENVE F699—Thesis....6
- Approved electives**....6 – 9

c. Minimum credits required....30

** Complete two semesters at 1 credit each.*
*** Electives as approved by the student's committee (6 credits for thesis option; 9 credits for project option). For Environmental Engineering candidates, 6 elective credits must be from the following: CE F663, ENVE F642, F643, F645, F646 and F648.*
Note: In addition to the courses listed in any of the concentration areas, electives include but are not limited to: BIOL F642, F680, F682, F685 CE F603, F661, F683, F684; CHEM F631, F655; ENVE F658; GE F620; and MATH F608, F615.

Water Supply and Waste Treatment

a. Complete the following
- ENVE F641—Aquatic Chemistry....3
- ENVE F645—Unit Processes — Chemical and Physical....3
- ENVE F646—Unit Processes — Biological....3
- ENVE F647—Biotechnology....3
- ENVE F650—Seminar* (1)....2
- ENVE F653—Measurements Laboratory....1
- ENVE F698—Project....3
- or ENVE F699—Thesis....6
- Approved electives**....6 – 9

b. Complete one of the following
- ENVE F643—Air Pollution Management....3
- ENVE F648—Solid Waste Management....3
- ENVE F649—Hazardous and Toxic Waste Management....3

c. Minimum credits required....30

** Complete two semesters at 1 credit each.*
*** Electives as approved by the student's committee (6 credits for thesis option; 9 credits for project option).*
Note: In addition to the courses listed in any of the concentration areas, electives include but are not limited to: BIOL F642, F680, F682, F685; CE F603, F661, F683, F684; CHEM F631, F655; ENVE F658; GE F620; MATH F608, F615.

See Arctic Engineering.
See Civil Engineering.
See Engineering for Ph.D. program.
See Engineering Management.
See Science Management.

FISHERIES

School of Fisheries and Ocean Sciences
907-474-7289
www.sfos.uaf.edu/academics/

M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits; Ph.D.: 18 thesis credits

Graduate degree program students attend classes and work with faculty in Juneau and/or Fairbanks. Academic programs can be

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developed in one of the following subject areas: fisheries management (Juneau and Fairbanks), fish/invertebrate biology (Juneau and Fairbanks) and aquaculture (Juneau). Research assistantships are available. Applicants should contact the fisheries program for further information and application forms.

Fairbanks' geographic location 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, School of Fisheries and Ocean Sciences, houses the UAF fisheries science program in southeast Alaska. The Juneau Center has well-equipped labs, including freshwater and seawater wet labs and computer labs. There is ready access to both marine and freshwater habitats. The Juneau Center is located near the Auke Bay National Marine Fisheries Service Laboratory north of Juneau. The Fishery Industrial Technology Center is located in Kodiak. It has new facilities for work in harvest technology, seafood technology, seafood biochemistry and microbiology.

Fisheries students in Fairbanks and Juneau have an opportunity to associate with personnel of federal and state conservation agencies These agencies often hire students for summer field work.

Graduate Program — M.S. Degree

1. Complete the following admission requirements:
   a. Prerequisites: calculus, elementary statistics, ichthyology or invertebrate zoology and computer competency.
   b. Submit GRE scores.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Complete the following:
   FISH F699—Thesis.....6 – 12
   STAT F401—Regression and Analysis of Variance 4
   Students must complete one of the following courses under each area:
   Biology and ecology of fish and shellfish
   BIOL F415/MSL F615—Physiology of Marine Organisms....3
   FISH F425—Fish Ecology 3
   FISH F426/FISH F626—Behavioral Ecology of Fishes.....3
   FISH F428/FISH F628—Physiological Ecology of Fishes 3
   FISH F633—Pacific Salmon Life Histories 3
   FISH F650—Fish Ecology 3
   FISH F651—Fishery Genetics 4
   MSL F640—Fisheries Oceanography 4
   MSL F652—Marine Ecosystems 3
   Quantitative population dynamics of fish and shellfish
   FISH F421—Fisheries Population Dynamics 4
   FISH F601—Quantitative Fisheries Science.....3
   FISH F621—Estimation of Fish Abundance 3
   FISH F622—Quantitative Fish Population Dynamics II 3
   Management and human dimensions of fisheries
   FISH F411—Human Dimensions of Environmental Systems 3
   FISH F487—Fisheries Management 3
   FISH F640—Management of Renewable Resources.....3
   FISH F675-—Political Ecology of the Oceans.....3
   Graduate seminars 2
5. Minimum credits required.....30

Note: Students working in subject areas involving significant non-English literature may be expected to read the appropriate foreign language.

Note: Only 9 credits of the required 30 M.S. degree credits can be at the 400-level.

Graduate Program — Ph.D. Degree

1. Complete the following admission requirement:
   a. Complete a master's degree in a fisheries-related field or meet the requirements as outlined below to be accepted directly into a Ph.D. program without a master's degree.
   b. Submit GRE scores.
2. Complete the general university requirements (page 198).
3. Complete the Ph.D. degree requirements (page 203).
4. Complete at least one year of full-time course work, as approved by the student's advisory committee.
5. Complete a thesis.
6. Minimum credits required.....18

Admission to Ph.D. program directly from bachelor's program: Entering graduate students whose highest earned degree is the baccalaureate are normally admitted as master of science candidates. However, exceptionally able and accomplished students in this category are eligible for direct admission to the Ph.D. program. Criteria for direct admission to the Ph.D. program from the baccalaureate are:

1. Endorsement by proposed chair of graduate advisory committee AND 2 or 3 below.
2. At least one first-authored manuscript published or accepted for publication in a peer-reviewed scientific journal or receipt of an NSF, NIH, or similar prestigious pre-doctoral fellowship. OR
3. Demonstrated research proficiency (e.g. undergraduate thesis, Research Experiences for Undergraduates or other intensive research experience) documented in the application AND either (1) attained a GPA of at least 3.5 at the undergraduate level, or (2) scored at the 80% level in two of three categories in the GRE.

Students who elect this route must fulfill course requirements as outlined for BOTH the M.S. and Ph.D. degrees. Applicants who do not meet these criteria may enter the graduate program as M.S. candidates, and in exceptional cases may petition for conversion to the Ph.D. program after Advancement to Candidacy (for the M.S.). Such petitions must be approved both by the student's current (M.S.) and proposed (Ph.D.) advisory committee and the department director or designee.

GENERAL SCIENCE

College of Natural Science and Mathematics
Department of Physics
907-474-6108
www.uaf.edu/physics/

M.S. Degree

Minimum Requirements for Degree: 30 credits

The general science program offers M.S. degrees in the biological sciences, chemistry, the geosciences and physics. The M.S. degree may be described as a breadth degree, rather than a depth degree, so a candidate normally pursues a course of study in one of these disciplines and is cooperating with at least one other discipline.

Graduate Program — M.S. Degree

1. Complete the following admissions requirement:
   a. Complete a baccalaureate degree with a 3.0 GPA.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).

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4. 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 3 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.
5. Minimum credits required 30

See Physics, Applied.
See Physics, Computational.
See Physics.
See Physics, Space.

GEOLOGICAL ENGINEERING

College of Engineering and Mines
Department of Mining and Geological Engineering
907-474-7388
www.uaf.edu/cem/ge/

M.S. Degree

Minimum Requirements for Degree: 30 – 33 credits

Geological engineering deals 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.

The graduate program prepares students for employment with industry, consulting companies and government agencies.

Graduate Program — M.S. Degree

1. Complete a comprehensive entrance exam.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Complete the thesis or non-thesis requirements:

Thesis

a. Complete 12 credits from the following with a maximum of 6 credits from the selected research focus group:

Geotechnical Engineering Focus Area:
GE F440—Slope Stability 3
GE F665—Advanced Geological Materials Engineering 3
GE F666—Advanced Engineering Geology 3
GE F668—Tunneling Geotechniques 3
GE F671—Engineering Application of Digital Image Processing 3

Geoenvironmental Engineering Focus Area:
GE F610—Subsurface Hydrology 3
GE F620—Advanced Groundwater Hydrology 3
GE F622—Unsaturated Soil Geoengineering 3
GE F649—Hazardous and Toxic Waste Management 3

Georesource Engineering Focus Area
GE F631—Electron Microprobe Methods 3
GE F630—Advanced Applied Mining Geology 3
GE F633—Fluid Inclusion Methods in Mineral and Petroleum Exploration 3
GE F635—Advanced Geostatistical Applications 3
MIN F621—Advanced Mineral Economics 3

b. Geological engineering courses* and technical electives 11
c. Complete the following:
GE F692—Graduate Seminar 1
GE F699—Thesis 6
d. Minimum credits required 30

* *NOTE: Geological engineering courses may be taken from any focus group that is approved by the graduate advisory committee.*

Non-Thesis

a. Complete 12 credits from the following with a maximum of 6 credits from the selected research focus group:

Geotechnical Engineering Focus Area:
GE F440—Slope Stability 3
GE F665—Advanced Geological Materials Engineering 3
GE F666—Advanced Engineering Geology 3
GE F668—Tunneling Geotechniques 3
GE F671—Engineering Application of Digital Image Processing 3

Geoenvironmental Engineering Focus Area:
GE F610—Subsurface Hydrology 3
GE F620—Advanced Groundwater Hydrology 3
GE F622—Unsaturated Soil Geoengineering 3
GE F649—Hazardous and Toxic Waste Management 3

Georesource Engineering Focus Area
GE F631—Electron Microprobe Methods 3
GE F630—Advanced Applied Mining Geology 3
GE F633—Fluid Inclusion Methods in Mineral and Petroleum Exploration 3
GE F635—Advanced Geostatistical Applications 3
MIN F621—Advanced Mineral Economics 3

b. Geological engineering courses* and technical electives 14
GE F692—Graduate Seminar 1
GE F698—Research/Project 6
c. Minimum credits required 33

* *NOTE: Geological engineering courses may be taken from any focus group that is approved by the graduate advisory committee.*

GEOLOGY

College of Natural Science and Mathematics
Department of Geology and Geophysics
907-474-7565
www.uaf.edu/geology/

M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits; Ph.D.: 18 thesis credits

Graduates in geology have broad backgrounds in the earth sciences and firm foundations in mathematics, physics and chemistry. There are many concentrations available in the geological sciences, and the suggested curricula are intended to be flexible enough to allow students to pursue their own emphasis. The M.S. program is tailored to the special research and study interest of the student.

There are about 40 professional geoscientists in residence on campus and graduate students normally participate in the ongoing research of these professionals. Teaching and research assistantships are available to graduate students in many of these areas.

Graduate Program — M.S. Degree

Concentrations: Economic Geology; General Geology; Petroleum Geology; Quaternary Geology; Remote Sensing; and Volcanology

1. Complete the following admission requirements:
   a. Submit GRE scores.
   b. Complete a background at least to the level of a B.S. concentration in geology, geophysics or earth science.
2. Complete the general university requirements (page 198).

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3. Complete the master's degree requirements (page 202).
   a. Complete 6 – 12 thesis credits.
   b. Complete any deficiencies concurrently with this degree.
4. Submit a written thesis proposal; and pass a written or oral comprehensive examination.
5. Complete and submit a written thesis and pass an oral defense of thesis.
6. Complete one of the following concentrations:

Economic Geology

   a. Complete GEOS F675, GEOS F618 or equivalent; GEOS F418 or equivalent; 9 credits in applied geoscience; and at least one course in mineral economics or engineering management, as approved by the graduate advisory committee.
   b. Minimum credits required.....30

General Geology

   a. Complete 12 credits at the F600-level as approved by the graduate advisory committee.
   b. Minimum credits required.....30

Petroleum Geology

   a. Complete 12 credits of course work at the F600-level from courses in the following disciplines: structural geology, stratigraphy, sedimentology, geophysics and/or petroleum engineering, as approved by the graduate advisory committee.
   b. Minimum credits required.....30

Quaternary Geology

   a. Complete 9 credits in Quaternary geology and at least one course in another area of Quaternary studies, as approved by the graduate advisory committee.
   b. Minimum credits required.....30

Remote Sensing

   a. Complete GEOS F654 or GEOS F657 and 10 credits in remote sensing-related courses, as approved by the graduate advisory committee.
   b. Minimum credits required.....30

Volcanology

   a. Complete 12 credits at the F600-level in volcanology-related courses, as approved by the graduate advisory committee.
   b. Minimum credits required.....30

Graduate Program — Ph.D. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete the general university requirements (page 198).
3. Complete the course work requirements for the appropriate M.S. concentration.
4. Complete the Ph.D. degree requirements (page 203).
5. As part of the Ph.D. degree requirements, complete the following:
   a. Complete and pass a written and oral comprehensive examination.
   b. Complete and submit a written thesis proposal for approval.
   c. Complete a research program as arranged with the graduate advisory committee.
   d. Complete 18 credits of thesis, write a thesis and pass an oral defense of thesis.
6. Minimum credits required.....18

Note: In addition to courses listed under the geology and geophysics program, students should check the course listings under the College of Engineering and Mines and the marine science program.

Note: In addition to the facilities available directly through the instructional program, UAF has active research laboratories in the fields of seismology, volcanology, paleomagnetism, isotope geochronology, glaciology and ice physics in the Geophysical Institute (see 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 Institutes and Centers, page 16.

GEOPHYSICS

College of Natural Science and Mathematics
Department of Geology and Geophysics
907-474-7565
www.uaf.edu/geology/

M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits; Ph.D.: 18 thesis credits

Graduate Program — M.S. Degree

Concentrations: Solid-Earth Geophysics; Snow, Ice and Permafrost Geophysics; Remote Sensing Geophysics

1. Complete the following admission requirements:
   a. Submit GRE scores.
   b. Complete a background at least to the level of a B.S. concentration in geology, geophysics or an appropriate physical science or engineering.
   c. Complete MATH F421 and MATH F422; or equivalent.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
   a. Complete 6 – 12 thesis credits.
   b. Complete any deficiencies concurrently with this degree.
4. Submit a written thesis proposal and pass an oral comprehensive examination centered on this proposal.
5. Complete and submit a written thesis and pass an oral defense of thesis.
6. Complete 6 credits of the following geophysics core requirements:
   GEOS F602—Geophysical Fields.....3
   GEOS F620—Geodynamics.....3
   GEOS F654—Visible and Infrared Remote Sensing.....3
   GEOS F657—Microwave Remote Sensing.....3
7. Complete one of the following concentrations:

Solid-Earth Geophysics

   a. Complete 6 credits from the following:
   GEOS F604—Intermediate Seismology.....3
   GEOS F605—Geochronology.....3
   GEOS F613—Global Tectonics.....3
   GEOS F655—Tectonic Geodesy.....3
   GEOS F671—Volcano Seismology.....3
   b. Minimum credits required.....30

Snow, Ice and Permafrost Geophysics

   a. Complete 6 credits from the following:
   GEOS F614—Ice Physics.....3
   GEOS F615—Sea Ice.....3
   GEOS F616—Permafrost.....3
   GEOS F617—Glaciers.....3
   b. Minimum credits required.....30

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Remote Sensing

a. Complete 7 credits from the following list:
   GEOS F654—Visible and Infrared Remote Sensing 3
   GEOS F657—Microwave Remote Sensing 3
   GEOS F622—Digital Image Processing in the Geosciences 3
   GEOS F434/F634—Remote Sensing of the Cryosphere 4
   GEOS F484/F684—Remote Sensing Bi-Weekly Seminar 1
   GEOS F676—Remote Sensing of Volcanic Eruptions 3
   GEOS F639—InSAR and its Applications 3
   ATM F413/F613—Atmospheric Radiation 3
b. Complete 6 credits from relevant geology and geophysics courses as agreed by the advisory committee.
c. Minimum credits required 30

Graduate Program — Ph.D. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete the general university requirements (page 198).
3. Complete the course work requirements for the appropriate M.S. concentration.
4. Complete the Ph.D. degree requirements (page 203).
5. As part of the Ph.D. degree requirements, complete the following:
   a. Complete and pass a written and oral comprehensive examination.
   b. Complete and submit a written thesis proposal for approval.
   c. Complete a research program as arranged with the graduate advisory committee.
   d. Complete 18 credits of thesis, write a thesis and pass an oral defense of thesis.
6. Minimum credits required 18

INDIGENOUS STUDIES

College of Liberal Arts
College of Rural and Community Development
School of Education
907-474-7464
www.uaf.edu/cxcs/indigenousphd/

Ph.D. Degree

Minimum Requirements for Degree: 48 credits

Indigenous studies doctoral candidates will participate in research activities across a variety of UAF academic disciplines and applied fields. Students are encouraged to engage in comparative studies with other indigenous peoples around the world and to focus their dissertation research on issues of relevance to Alaska and the Arctic. Using the interdisciplinary Ph.D. model of academic assignment, the student's home base will be in the school or college of the student's major advisor, who also serves as an affiliate faculty member for the program.

The program objectives and its curriculum center around five thematic areas of study: indigenous studies/research, indigenous knowledge systems, indigenous education/pedagogy, indigenous languages and indigenous leadership. Students may focus on one of these areas or draw on multiple themes in collaboration with their graduate committee to develop their areas of knowledge and dissertation research. In collaboration with the graduate committee, each student will develop a program of course work and research that produces a unique intellectual contribution to the applied fields associated with Indigenous Studies.

Graduate Program — Ph.D. Degree

1. Complete the general university requirements (page 198).
2. Complete the Ph.D. degree requirements (page 203).
   a. Complete required and elective courses.
   b. Complete the following:
      ANL/CCS/ED/RD/ F608—Indigenous Knowledge Systems 3
      ANL/CCS/ED/RD/ F690—Seminar in Cross-Cultural Studies ..3
   c. Complete two of the following core courses:
      ANL F601—Seminar in Language Revitalization 3
      ANTH F631—Language and Culture Seminar 3
      ANTH F646—Economic Anthropology 3
      ANTH/BIOL/ECON/NRM F647—Regional Sustainability 3
      ANTH/BIOL/ECON/NRM F649—Integrated Assessment and Adaptive Management 3
      ANTH/NORS F610—Northern Indigenous Peoples and Contemporary Issues 3
      CCS F602—Cultural and Intellectual Property Rights.....3
      CCS/ED F610—Education and Cultural Processes 3
      CCS/ED F611—Culture, Cognition and Knowledge Acquisition.....3
      CCS F612—Traditional Ecological Knowledge 3
      ED/LING F621—Cultural Aspects of Language Acquisition 3
      ED F616—Education and Socio-Economic Change 3
      ED F620—Language, Literacy and Learning.....3
      ED F660—Educational Administration in Cultural Perspective 3
      RD F600—Circumpolar Indigenous Leadership Symposium ...3
      RD F601—Political Economy of the Circumpolar North.....3
      RD F651—Management Strategies for Rural Development 3
      RD F652—Indigenous Organization Management 3
   d. Complete two of the following research courses:
      ANTH F624—Analytical Techniques 3
      ANTH F637—Methods in Ethnohistorical Research 3
      CCS F601—Documenting Indigenous Knowledge 3
      CCS/ED F603—Field Study Research Methods 3
      RD F650—Community-Based Research Methods 3
   e. Complete four specialty elective courses 12
   f. Complete doctoral dissertation
      ANL/CCS/ED/RD F699—Thesis.....18
3. Minimum credits required 48

Completion of 18 distance credits will constitute residency.

Note: Recommended additional academic experience:

Students are encouraged to enroll in a minimum of one semester of course work at a partner institution with program offerings related to their area of specialization. Students are encouraged to make at least one formal academic presentation at a statewide, national or international meeting, as well as a community-level presentation in Alaska. Students are encouraged to study a language other than English, as appropriate for the thematic area in which they are enrolled.

INTERDISCIPLINARY STUDIES

Office of the Graduate School and Interdisciplinary Programs
907-474-7464
fygrads@uaf.edu
www.uaf.edu/gradsch/classes/interdisciplinary-program/

M.A., M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.A. and M.S.: 30 credits; Ph.D.: 18 thesis credits

The UAF interdisciplinary program provides flexibility to students who have well-defined goals that do not fit into one of the established majors offered by the university. Interdisciplinary Studies is located in the Graduate School office. Help with the application process, contact information for faculty advisors and assistance

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for interdisciplinary students is available at 907-474-7464 or see www.uaf.edu/gradsch/classes/interdisciplinary-program/.

Graduate Program — M.A. or M.S. degree

1. Complete the admission process including the following:
   a. Submit GRE scores
   b. In consultation with a UAF faculty member: prepare and submit a statement of research goals and justification for interdisciplinary approach, and a preliminary graduate study plan.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Pass a comprehensive examination.
5. Minimum credits required.....30

Graduate Program — Ph.D. degree

1. Complete the admission process including the following:
   a. Submit GRE scores
   b. In consultation with a UAF faculty member: prepare and submit a statement of research goals and justification for interdisciplinary approach, and a preliminary graduate study plan.
2. Complete the general university requirements (page 198).
3. Complete the Ph.D. degree requirements (page 203).
4. Pass written and oral comprehensive exams.
5. Minimum credits required.....18

JUSTICE, ADMINISTRATION OF

College of Liberal Arts
Justice Program
907-474-5500
www.uaf.edu/justice/

M.A. Degree

Minimum Requirements for Degree: 30 credits

The justice discipline represents a melding of theoretical and applied concepts, and the M.A. degree in administration of justice reflects that dichotomy. Consequently, students explore theoretical models associated with different aspects of the criminal justice system, but also study the structure and administration of the criminal justice system.

The M.A. degree in administration of justice has been designed as a web-based degree program in order to accommodate the needs of justice professionals for whom taking a two-year leave of absence from their profession is not feasible, or for whom relocating to the Fairbanks vicinity is not possible. The M.A. degree program has attracted justice professionals from throughout the country who have found the flexibility of a web-based format useful.

Graduate Program — M.A. Degree

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete a minimum of 18 graduate UAF credits.
4. Receive a passing grade on a written comprehensive exam administered on the UAF campus in conjunction with attendance in JUST F690.
5. Receive a passing grade on an oral defense examination of a thesis or project.
6. Complete a thesis or project.
7. Complete the following:
   JUST F605—Administration and Management of Criminal Justice Organizations.....3
   JUST F615—Justice Program Planning/Evaluation and Grant Writing.....3
   JUST F620—Personnel Management in Criminal Justice.....3
   JUST F625—Legal Aspects of Criminal Justice Management...3
   JUST F640—Community/Restorative Justice.....3
   JUST F690—Seminar in Critical Issues and Criminal Justice Policy.....3
   JUST F698/F699—Master's Project or Thesis.....6
8. Complete 6 credits from the following:
   JUST F610—Ethics in Criminal Justice Management.....3
   JUST F630—Media and Community Relations for Criminal Justice Administrators.....3
   JUST F650—Analysis Techniques for the Criminal Justice Administrator.....3
   JUST F670—Seminar in the Administration of Juvenile Justice.....3
9. Minimum credits required.....30

LINGUISTICS, APPLIED

College of Liberal Arts
Linguistics Program
907-474-6585
www.uaf.edu/linguist/

M.A. Degree

Minimum Requirements for Degree: 30 credits

Linguistics is the study of language and covers a variety of subjects including theories of grammar and how we produce language. It has a number of applications, including language teaching, teaching of English as a second or foreign language, and documentation of endangered languages.

Graduate students in applied linguistics may pursue a general program or develop a concentration in either language documentation or second language acquisition and teacher education. Students are expected either to have or to develop proficiency in at least one language other than English, as demonstrated by a proficiency exam or a comparable measure determined by the student's graduate committee. Students pursuing certification in Second Language Acquisition and Teacher Education (SLATE) must demonstrate proficiency in the language they intend to teach.

The general program provides students with a practical foundation in linguistics but remains broad enough to allow exploration of a variety of possible thesis topics.

Language documentation is designed to provide practical foundations in linguistics, techniques of fieldwork and documentation, with special focus on Alaska Native languages.

Second Language Acquisition and Teacher Education (SLATE) is designed for students interested in teaching English as a second language, a foreign or Alaska Native language. It is designed to provide theoretical and practical foundations in second language acquisition, language teaching, materials development, and language assessment.

Graduate Program — M.A. Degree

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete the following core courses:
   LING F600—Research Methods.....3
   LING F601—Principles of Linguistic Analysis.....3

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4. Complete one of the following concentrations:

General

a. Complete the following:
LING F602—Second Language Acquisition....3
LING F603—Phonetics and Phonology....3
LING F604—Morphology and Syntax....3

b. Complete three of the following:
LING F610—Theory and Methods of Second Language Teaching....3
LING F611—Curriculum and Materials Development....3
LING F612—Language Assessment....3
LING F620—Semantics....3
LING F627—Description and Documentation....3
LING F630—Historical Linguistics....3
LING F631—Field Methods I....3
LING F634—Field Methods II....3
LING F650—Language Policy and Planning....3

c. Complete two electives approved by graduate committee.

Language Documentation

a. Complete the following:
LING F603—Phonetics and Phonology....3
LING F604—Morphology and Syntax....3
LING F627—Description and Documentation....3
LING F631—Field Methods I....3
LING F634—Field Methods II....3

b. Complete one elective approved by graduate committee.

Second Language Acquisition Teacher Education

a. Complete the following:
LING F602—Second Language Acquisition....3
LING F610—Theory and Methods of Second Language Teaching....3

b. Complete three of the following:
LING F611—Curriculum and Materials Development....3
LING F612—Language Assessment....3
LING F650—Language Policy and Planning....3
LING F660—Internship....3

c. Complete one elective approved by graduate committee.

5. Complete one of the following:
LING F698—Research (6)
or LING F699—Thesis (6)....6

6. Minimum credits required....30

MARINE BIOLOGY

School of Fisheries and Ocean Sciences
Graduate Program in Marine Sciences and Limnology
907-474-7289
www.sfos.uaf.edu/academics/degrees/grad/marinebiology/

M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits; Ph.D.: 18 thesis credits

The marine biology graduate program focuses on the ecology, physiology and biochemistry/molecular biology of marine organisms. Students may pursue either a M.S. or Ph.D. degree in marine biology. Graduate students are afforded excellent opportunities for laboratory and field research through the Institute of Marine Science. Laboratory facilities are available in Fairbanks, the Seward Marine Center, the Juneau Center, School of Fisheries and Ocean Sciences, the Fishery Industrial Technology Center in Kodiak and at the Kasitsna Bay Laboratory. Opportunities for field work are available on the R/V Little Dipper, which operates in Resurrection Bay.

Students may select courses offered by the graduate program in marine sciences and limnology, the fisheries program, the biology and wildlife department and the chemistry and biochemistry department.

Students considering graduate study in marine biology should have a strong background in biology, molecular biology or biochemistry. Students are admitted on the basis of their ability and the capability of the program to meet their particular interests and needs. Faculty review requests for admission throughout the year. 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.

Graduate Program — M.S. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Complete a thesis.
5. Complete the following:
MSL F610—Marine Biology....3
MSL F615—Physiology of Marine Organisms....3
MSL F650—Biological Oceanography....3
MSL F651—Marine Biology and Ecology Field Course (4)
or MSL F611—Field Problems in Marine Biology (5)
or an equivalent field course at another institution....4 – 5
MSL F692—Seminar....3
6. Minimum credits required....30

Graduate Program — Ph.D. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete the general university requirements (page 198).
3. Complete the Ph.D. degree requirements (page 203).
4. Complete course work at least equivalent to that required for the M.S. degree.
5. Minimum credits required....18

MATHEMATICS

College of Natural Science and Mathematics
Department of Mathematics and Statistics
907-474-7332
www.dms.uaf.edu

M.A.T., M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.A.T.: 36 credits; M.S.: 30 – 35 credits; Ph.D.: 18 thesis credits

The number of new fields in which professional mathematicians find employment grows continually. This department prepares students for careers in industry, government and education.

The M.S. in mathematics prepares students for Ph.D. work, in addition to providing a terminal degree for those planning to enter industry or education. The M.A.T. degree prepares graduates to teach secondary school mathematics. The aim of the Ph.D. program is to provide the student with the expertise to accomplish significant research in applied or pure mathematics, as well as to provide a broad and deep professional education.

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.

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The Department of Mathematics and Statistics also offers programs in statistics (see separate listings).

Graduate Program — M.A.T. Degree

1. Complete the following admission requirements:
   a. Submit three letters of recommendation concerning the applicant's educational background and quantitative training.
   b. Submit complete transcripts for all college-level work.
   c. Submit a resume.
   d. Submit a written statement of goals.
   e. The department does not require any GRE, but recommends applicants provide GRE general scores.
   f. Complete and submit a TOEFL score of at least 600 (this requirement is only for foreign applicants who seek a teaching assistantship).
   g. The department gives preference to foreign applicants who also submit results of the Test of Spoken English (TSE).
2. Complete the general university requirements (page 198).
3. Complete the M.A.T. degree requirements (page 204).
4. Complete the following:
   MATH courses*.....18
5. Minimum credits required.....36

* *At least 12 credits must be at the F600-level.*

Graduate Program — M.S. Degree

1. Complete the following admission requirements:
   a. Submit three letters of recommendation concerning the applicant's educational background and quantitative training.
   b. Submit complete transcripts for all college-level work.
   c. Submit a resume.
   d. Submit a written statement of goals.
   e. The department does not require any GRE, but recommends applicants provide GRE general scores.
   f. Complete and submit a TOEFL score of at least 600 (this requirement is only for foreign applicants who seek a teaching assistantship).
   g. The department gives preference to foreign applicants who also submit results of the Test of Spoken English (TSE).
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202) including a written comprehensive exam.
4. Complete the following mathematics (core) courses:
   MATH F631—Theory of Modern Algebra I.....4
   MATH F641—Real Analysis 4
   MATH F645—Complex Analysis 4
   MATH F651—Topology.....4
5. Complete mathematics electives.
6. Complete a project or thesis.
7. Minimum credits required.....30 – 35

Graduate Program — Ph.D. Degree

1. Complete the following admission requirements:
   a. Submit three letters of recommendation concerning the applicant's educational background and quantitative training.
   b. Submit transcripts indicating completion of a masters degree in mathematics or equivalent.
   c. Submit a resume.
   d. Submit a written statement of goals.
   e. The department does not require any GRE, but recommends applicants provide GRE general scores.
   f. Complete and submit a TOEFL. (For teaching assistantship consideration, foreign applicants whose native language is not English. Score of at least 600.)
   g. The department gives preference to applicants who also submit results of the Test of Spoken English (TSE).
2. Complete the general university requirements (page 198).
3. Complete the Ph.D. degree requirements (page 203).
4. Minimum credits required.....18

MECHANICAL ENGINEERING

College of Engineering and Mines
Department of Mechanical Engineering
907-474-7136
www.uaf.edu/cem/me/

M.S. Degree

Minimum Requirements for Degree: 30 credits

The mission of the mechanical engineering department at UAF is to offer the highest quality, contemporary education at undergraduate and graduate levels, and to perform research appropriate to the technical needs of the state of Alaska, the nation and the world.

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.

The goals and objectives of the mechanical engineering program are to offer a mechanical engineering program designed to prepare its graduates for careers at the professional level; maintain, as a base, ABET accreditation of the undergraduate program; provide continuing educational opportunities for graduate engineers; serve as a resource of technical knowledge for the state as well as the nation; conduct research in all areas of mechanical engineering including cold regions mechanical engineering; and offer a graduate program in mechanical engineering at the M.S. and Ph.D. levels.

The educational objectives of the department are that graduates from the mechanical engineering program must be able to apply the knowledge of mathematics, science and engineering; be able to design and conduct experiments, as well as to analyze and interpret data; be able to design a system, component or process to meet desired needs; be able to function on multi-interdisciplinary teams; be able to identify, formulate and solve engineering problems; understand professional and ethical responsibility; be able to communicate effectively; have the broad education necessary to understand the impact of engineering solutions in a global and societal context; recognize the need for, and be able to engage in, life-long learning; understand contemporary issues; and be able to use the techniques, skills and modern engineering tools necessary for engineering practice. The department ensures that each course in the curriculum plays a meaningful role in satisfying one or more of these objectives.

Graduate Program — M.S. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Complete the following:
   ME F631—Advanced Mechanics of Materials.....3
   ME F634—Advanced Materials Engineering 3
   ME F641—Advanced Fluid Mechanics.....3
   ME F642—Advanced Heat Transfer 3
   ME F608—Advanced Dynamics.....3

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5. Complete the thesis or non-thesis requirements:
   Thesis
   a. Complete the following:
      ME F699—Thesis 6
      Electives* 9
   b. Minimum credits required 30

   Non-Thesis
   a. Complete the following:
      Electives* 12
      ME F698—Project 3
   b. Minimum credits required 30

* *ME or other engineering, science, or mathematics courses approved by the student's advisory committee.*

See Engineering for Ph.D. degree program.

MINERAL PREPARATION ENGINEERING

College of Engineering and Mines
Department of Mining and Geological Engineering
907-474-7388
www.uaf.edu/cem/min/

M.S. Degree

Minimum Requirements for Degree: 30 – 36 credits

The mineral preparation engineering program offers specialization in the processes used to concentrate target minerals and remove undesirable material from mined ore. Interdisciplinary study of chemistry, physics, the geological sciences and engineering are integrated to allow the characterization, separation, agglomeration, extraction and handling of mineral particles.

Since large quantities of solid waste and process water are often produced as a result of mineral extraction, pollution control technology is also an important aspect of mineral preparation.

Students are prepared for career opportunities in the mineral industry, consulting and research firms, environmental industry, and investment and commodity firms in the private sector.

Graduate Program — M.S. Degree

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete the following:
   MIN F415—Coal Preparation 3
   MPR F601—Froth Flotation 3
   MPR F606—Plant Design 3
   MPR F688—Graduate Seminar I 1
4. Complete the thesis or non-thesis requirements:
   Thesis
   a. Complete the following:
      MPR F699—Thesis 6
      Technical electives 14
   b. Minimum credits required 30

   Non-Thesis
   a. Complete the following:
      MPR F698—Research/Project 6
      Technical electives 20
   b. Minimum credits required 36

MINING ENGINEERING

College of Engineering and Mines
Department of Mining and Geological Engineering
907-474-7388
www.uaf.edu/cem/min/

M.S. Degree

Minimum Requirements for Degree: 31 – 37

The mining engineering program emphasizes engineering as it applies to the exploration and development of mineral resources and upon the economics of the business of mining. The program offers specialization in exploration, mining or mineral beneficiation.

Students are prepared for job opportunities with mining and construction companies, consulting and research firms, equipment manufacturers, investment and commodity firms in the private sector, as well as with state and federal agencies.

Mining engineers may aspire to, and achieve, the highest positions in the industry: operating or engineering management, government agency director or entrepreneur.

Graduate Program — M.S. Degree

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete the following:
   MIN F688—Graduate Seminar I 1
4. Complete the thesis or non-thesis requirements:
   Thesis
   a. Complete the following:
      MIN F600-level courses 12
      Technical electives 11
      MIN F699—Thesis 6
   b. Minimum credits required 30

   Non-Thesis
   a. Complete the following:
      MIN courses 12
      Technical electives 17
      MIN F698—Research/Project 6
   b. Minimum credits required 36

MUSIC

College of Liberal Arts
Department of Music
907-474-7555
www.uaf.edu/music/

M.A. Degree

Minimum Requirements for Degree: 30 credits

The academic content of the graduate program is determined by the student and his or her graduate advisory committee. Each graduate student's program is individually tailored and designed to meet the student's professional interests and aspirations, consistent with program requirements. (The UAF academic diploma will read: Master of Arts in Music. It will not display any reference to the student's area of music specialization.)

Recitals and concerts provide students with a variety of musical experiences which expand the regular curriculum.

The music department of UAF is a full member of the National Association of Schools of Music, the national accrediting organization.

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Graduate Program — M.A. Degree in Music

Concentrations: Conducting, Music Education, Music History, Performance, Theory/Composition

1. Complete the following admission requirements:
   a. Take an evaluative preliminary examination in music theory and history.*
   b. Music education majors must complete an essay that includes 1) their philosophy of music education, and 2) a discussion of what they believe to be the most current issues in music education.
   c. Composition majors must submit examples of previous work.
   d. Performance majors must demonstrate acquaintance with solo literature of the various historical periods through audition or submission of performance tapes.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).**
4. MUS F601—Introduction to Graduate Study.....3
5. MUS F625—Topics in Music History.....3
   or MUS F631—Seminar in Music Theory: History and Pedagogy.....3
6. Two semesters of any music performance ensemble.....2
7. Six credits to be selected from MUS F421, MUS F422, MUS F423 or MUS F424.
8. No more than 12 credits of MUS F697 allowed
9. MUS F698: Research (6 credits).
10. Twenty-one credits must be at F600-level. Optionally, no more than 9 credits of F400-level.
11. Complete at least 16 credits in a primary area of specialization (includes research), with the balance in a secondary area.
12. Students majoring in vocal performance or music history must demonstrate proficiency in languages appropriate to their area of concentration. Proficiency will be determined by the student's graduate committee in conjunction with the Department of Foreign Languages. Graduate students studying applied music and/or presenting recitals are governed by the same regulations concerning recital preparation, recital jury pre-hearings, and jury examinations as apply to undergraduate students. These regulations are described in the Music Handbook.
13. Successfully complete comprehensive oral examination in music history and theory.
14. Successfully complete oral defense of thesis, recital program notes, or project.
15. Minimum credits required.....30 (36 if thesis is included)

* *This preliminary exam, to help determine the areas of strength and deficiency, will cover the following areas: a) music theory, b) music history and literature, c) demonstration of keyboard proficiency, and d) performance ability. Applicants will be accepted from any accredited institution; before admission to a degree program, however, all students (including UAF graduates) must take these preliminary examinations.*

** *After completing about one semester of the program, students will meet with their advisory committee to define precisely the student's major area of specialization. Such specialization is not to be conceived narrowly as a thesis topic, but rather as a broad area in which the student plans to spend a significant amount of their study. Advisory meetings may be repeated until such time as the student has satisfactorily defined the area of specialization. Each student, with the approval of the advisory committee, shall develop an appropriate final project or thesis. A thesis is required for students majoring in music theory and music history. Performance majors must present a graduate recital and prepare a supporting paper on selected aspects of the recital.*

*** *Private lessons at either the senior or graduate level. Committee may suggest further study if remedial work is deemed necessary.*

Note: All F600-level courses are restricted to graduate students; however graduate students may elect some of their courses from upper-division undergraduate courses (F300- or F400-level).

NATURAL RESOURCES AND SUSTAINABILITY

School of Natural Resources and Agricultural Sciences
School of Management
907-474-7188
www.uaf.edu/snras/
www.uaf.edu/som/

Ph.D. Degree

Minimum Requirements for Degree: 18 credits

The joint Ph.D. Program in natural resources and sustainability prepares future leaders as academic researchers, agency professionals and analysts of non-governmental organizations and communities for careers at the frontiers of science in the management of natural resources and environment.

Exploring and understanding natural resource management systems requires both a well-defined skill set and a clear understanding of how specific problems are linked to broader cultural, ecological and geopolitical contexts. Thus, the study of natural resources and sustainability encompasses a spectrum of topics. The Ph.D. builds on the existing strengths of the School of Natural Resources and Agricultural Sciences and School of Management faculty members to educate students in specific areas while training them to be conversant in the broader range of relevant topic areas.

The program objectives and its curriculum center around three thematic areas of study: 1) resource economics, 2) resource policy and sustainability science, and 3) forest and agricultural sciences. Each student draws on a common set of core courses, and with his/her graduate committee, develops a program of course work and research that produces a unique intellectual contribution to the applied field of natural resources and sustainability. Students elect to focus on one of the three thematic areas or they choose to integrate foci to develop their areas of knowledge and dissertation research.

Graduate Program — Ph.D. Degree

1. Complete the general university requirements (page 198).
2. Complete the Ph.D. degree requirements (page 203).
3. Complete course work in thematic area(s) as determined by the advisory committee.
4. Required and elective elements of the plan of study:
   a. Complete the following core course requirements:
      NRM 647—Regional Sustainability.....3
      NRM 649—Integrated Assessment and Adaptive Management.....3
      NRM 694—Natural Resources and Sustainability Ph.D. Seminar
      Complete two semesters.....2
   b. Outreach activity of one annual public presentation
   c. Advancement to candidacy occurs when the student demonstrates mastery in understanding sustainability and in-depth knowledge of the student's dissertation research topic area. Requirements for advancement to candidacy are determined by the academic committee of the student, and shall be consistent with the candidacy requirements for Ph.D. studies at UAF. The basis of the evaluation will be written and oral comprehensive exams.
   d. Dissertation defense seminar
   e. Dissertation defense examination
   f. Doctoral dissertation
5. Minimum credits required.....26

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NATURAL RESOURCES MANAGEMENT

School of Natural Resources and Agricultural Sciences
907-474-7083
www.uaf.edu/snras/

M.S., M.N.R.M.G. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits;
M.N.R.M.G.: 35 credits

The two master's degrees offered by the School of Natural Resources and Agricultural Sciences are designed for students desiring careers in resources management and students planning doctoral work, as well as those wishing to be better-informed citizens. The courses and curriculum for the two degrees were developed in cooperation with groups and agencies that work professionally with resource management in Alaska. These agencies, including the Alaska Department of Natural Resources, Alaska Department of Fish and Game, Agricultural Research Service, U.S. Forest Service, Bureau of Land Management, Natural Resources Conservation Service, and U.S. Fish and Wildlife Service contribute significantly to the programs by providing guest lecturers and internship and research opportunities for students.

Because of the diversity and broad scope of the field, each degree is customized according to the student's interests and advisory committee's recommendations. Student research projects and theses have typically been in the fields of forest management, land use planning, soil management, natural resource policy, range management, parks and recreation management, horticulture, agronomy, animal science, climate change, and GIS.

A bachelor of science or bachelor of arts degree in a relevant discipline is required for acceptance into either program. Candidates should have general familiarity with the major resource fields. The student's committee may require the student to take courses to remedy any deficiencies; these credits will not count toward the credits required for the degree.

Applicants must submit three letters of recommendation, official GRE scores, undergraduate transcripts and a statement of the applicant's goals. The latter should include information about why you are applying for the degree, why you chose UAF and SNRAS, and how such a degree would fit into your career goals. Applications cannot be considered until all these items have been received by the Admissions Department.

The M.S. degree in natural resource management is designed for those intending to pursue a career conducting research in management problems and/or to proceed on to a doctoral program. Thesis research in natural resources management is directed toward resource problems and based on hypothesis testing.

The master's degree in natural resource management and geography is designed to prepare students for a management career in natural resources planning and administration; communication and public information; and/or operational innovation, improvement and impact assessment. While not requiring scientific research, the work is expected to involve critical reflection, empirical inquiry and intellectual honesty. A written product (an "opus") and an oral presentation demonstrating sound scholarship will be required. Final acceptance of the project will be by the student's committee and the associate dean of SNRAS.

Graduate Program — M.S. Degree

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete the following:
   NRM F601—Research Methods in Natural Resources 2
   or an approved research methods course*
   NRM F692—Graduate Seminar.....3
   NRM F699—Thesis .....6 – 12
   Statistics course at the F400-level or above** 3
4. Additional approved courses as needed to total 30 credits (these courses will be approved by the student's committee). Up to 6 of these credits may be 400-level courses.
5. Complete and successfully defend the thesis.
6. Minimum credits required.....30

* *Requirement may be met with a research methods course in a discipline related to natural resources management.*

** *Requirement may be met with a statistics course in mathematical sciences or in a discipline related to natural resources management.*

Graduate Program — M.N.R.M.G. Degree

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete the following:
   NRM F601—Research Methods in Natural Resources (2)
   or an approved research methods course*.....2
   NRM F692—Graduate Seminar.....3
   NRM F698—Non-thesis research/project.....6
   Statistics course at the F400-level or above** 3
4. Additional approved courses as needed to total 35 credits (these courses will be approved by the student's committee and the SNRAS dean). Up to 9 of these credits may be 400-level courses.
5. Complete and successfully defend the opus.
6. Minimum credits required.....35

* *Requirements may be met with a research methods course in a discipline related to natural resources management.*

** *Requirements may be met with a statistics course in mathematical sciences or in a discipline related to natural resources management.*

NORTHERN STUDIES

College of Liberal Arts
907-474-7126
Interdisciplinary
www.uaf.edu/northern/

M.A. Degree

Minimum Requirements for Degree: 30 credits

The northern studies program offers an interdisciplinary study of northern problems and policy issues. 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 geographic location of UAF is outstanding for the study of northern issues. Students examine the countries and regions throughout the circumpolar North, and their distinctive problems, such as the survival of indigenous populations, environmental and wilderness issues, high rates of alcoholism and suicide, fragile environments, adaptation to extreme cold and cycles of light and darkness and adult development in small frontier societies.

The M.A. program is designed especially for students who live and work in the North and who want to expand their knowledge of the history, economics, politics, psychology and anthropology of northern regions. Many northern studies students are seeking employment with northern agencies and want to develop a broad perspective on northern issues. Some students plan to pursue doctoral work in a discipline such as history or anthropology and seek a master's degree with a broad approach. Other students are employed as teachers, military personnel, or agency staff and want a rich, interdisciplinary program. The program is suitable for any of these goals,

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and it is designed to be compatible with either full-time graduate study or full-time employment.

The M.A. program offers three concentrations: northern history, environmental politics and policy, and individualized study. Students of northern history benefit from the availability of the Alaska and circumpolar collections of the UAF library, UA Museum of the North, and the Polar Regions Collection. The environmental politics and policy concentration focuses on political, social and psychological responses to environmental change. The individualized study concentration has a focus selected by the student.

The program offers a thesis or non-thesis option. The choice of option is guided by the student's interests and goals, the graduate advisory committee, and the requirements of the university. Faculty in the program are drawn from such disciplines as Alaska Native studies, art, anthropology, economics, English, geography, history, library science, political science and psychology.

For information on studying at McGill University, Montreal, Canada; the University of Copenhagen, Denmark; or opportunities for study in the former U.S.S.R., see International Study Abroad and Exchange Programs.

Graduate Program — M.A. Degree

Concentrations: Individualized Study, Environmental Politics and Policy, and Northern History

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete the following
   NORS F600—Perspectives of the North.....3
   NORS F601—Research Methods and Sources in the North.....3
4. Complete two elective courses at the F400- or F600-level.....6
5. Complete one of the following:
   NORS F698—Project.....6
   NORS F699—Thesis.....6 – 12
6. Complete one of the following concentrations:

Individualized Study*

Complete 12 credits from the following:

a. Course offerings selected from the relevant department** and,
b. Courses offered within the Northern Studies program, including those in the other concentrations (below) and,
c. Any of the following:
   NORS F606—Science, Technology and Development in Northern Regions.....3
   NORS F614—Human Adaptation to the Circumpolar North ...3
   NORS F640—Ethics and Reporting in the Far North 3
   NORS F652—International Relations of the North.....3
   NORS F660—Government and Politics of Canada 3
   NORS F662—Alaska Government and Politics.....3
   NORS F668—Government and Politics of Russia.....3
   NORS F680—Comparative Education 3

* *The individualized study concentration may be used as a basis for a M.A. thesis/project typically under the direction of a faculty member in the most relevant department.*

** *Some students may, with the consent of their graduate committee, develop an individualized program with an emphasis on Alaska Native studies, northern art, northern sociology, northern policy studies, or another northern field or discipline.*

Environmental Politics and Policy*

Complete 12 credits from the following:
NORS/PS F603—Public Policy 3
NORS/PS F647—U.S. Environmental Policy.....3
NORS F648—Environmental Politics of the Circumpolar North 3
NORS/PS F654—International Law and the Environment 3
NORS/PS F655—Political Economy of the Global Environment 3
NORS/PS F656—Science, Technology and Politics.....3
NORS/PS F658—Comparative Environmental Politics.....3
NORS F613—Wilderness and Environmental Psychology 3

* *The environmental politics and policy concentration may be used as a basis for the M.A. thesis/project.*

Note: The environmental politics and policy concentration is a clear track toward interdisciplinary doctoral programs.

Northern History*

a. Complete the following:
   NORS/HIST F690—Researching and Writing Northern History 3
b. Complete 9 credits from the following:
   HIST F470—Seminar in Alaska History.....3
   NORS F661/HIST F662—History of Alaska.....3
   NORS/HIST F663—Foundations of Russian History 3
   NORS/HIST F664—Modern Russia.....3
   NORS/HIST F681—Polar Exploration and its Literature.....3
   NORS/HIST F683—20th Century Circumpolar History.....3

* *The northern history concentration may be used for the M.A. thesis/project.*

7. Minimum credits required.....30

OCEANOGRAPHY

School of Fisheries and Ocean Sciences
Graduate Program in Marine Sciences and Limnology
907-474-7289
www.sfos.uaf.edu/academics/degrees/grad/oceanography/

M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits; Ph.D.: 18 thesis credits

This program offers M.S. degrees in several concentration areas of oceanography: physical, chemical, biological, geological and fisheries. 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, including the Institute of Marine Science. These include laboratories in Fairbanks, the Seward Marine Center, Kasitsna Bay, the Juneau Center and the Fishery Industrial Technology Center in Kodiak. Research vessels operated by the institute and school include the R/V Little Dipper, which operates on day trips in Resurrection Bay. Laboratory facilities include a seawater system at Seward and a variety of modern and analytical instrumentation, including stable isotope mass spectrometers, a gamma spectrometer, a flow cytometer facility, and gas and liquid chromatography equipment. Mainframe and personal computing facilities are readily accessible to graduate students.

Oceanography is both interdisciplinary and multidisciplinary. For both M.S. and Ph.D. oceanography students, research emphasis is on processes influencing the ocean's circulation, composition, biological productivity and geology. Students considering graduate study in oceanography should have a strong background in physics, chemistry, biology, geology or mathematics, and a working familiarity with the other subjects.

Graduate Program — M.S. Degree

Concentrations: Biological, Chemical, Fisheries, Geological, Physical

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete the general university requirements (page 198).

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3. Complete the master's degree requirements (page 202).
4. Complete one of the following concentrations:

Biological, Chemical, Geological, Physical

a. Complete the following:
MSL F620—Physical Oceanography 3
MSL F630—Geological Oceanography 3
MSL F650—Biological Oceanography.....3
MSL F660—Chemical Oceanography 3
MSL F692—Seminar.....3
MSL F699—Thesis*.....open
Electives* .....open
b. Minimum credits required.....30
** Appropriate to area of concentration*

Fisheries

a. Complete the following:
MSL F620—Physical Oceanography 3
MSL F630—Geological Oceanography 3
MSL F640—Fisheries Oceanography 4
MSL F650—Biological Oceanography.....3
MSL F660—Chemical Oceanography 3
MSL F692—Seminar.....3
MSL F699—Thesis .....open
Electives.....open
b. Minimum credits required.....30

Graduate Program — Ph.D. Degree

1. Complete the following admission requirement:
a. Submit GRE scores.
2. Complete the general university requirements (page 198).
3. Complete the Ph.D. degree requirements (page 203).
4. Complete course work equivalent to M.S. degree.*
5. Minimum credits required.....18

* *There are no fixed course requirements, nor is an M.S. degree required to earn the Ph.D. degree. However, a candidate for the Ph.D. degree in oceanography (biological, chemical, fisheries, geological, and physical oceanography) will be expected to have completed course work at least equivalent to that required for the corresponding M.S. degree.*

Note: 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. Applications are considered throughout the year but students should apply by March 1 to have the best chance for admission and financial support for the subsequent fall semester. Assistantship stipends are awarded competitively and limited fellowship support is available. Most students are supported on research projects that relate directly to their degree research.

Note: Oceanography majors must demonstrate field experience aboard an oceanographic vessel.

PETROLEUM ENGINEERING

College of Engineering and Mines
Department of Petroleum Engineering
907-474-7734
www.uaf.edu/cem/pete/

M.S. Degree

Minimum Requirements for Degree: 30 – 36 credits

Petroleum engineering offers a unique look at the challenging problems confronting the petroleum industry. This program requires an understanding of many disciplines including mathematics, physics, chemistry, geology and engineering science. Courses in petroleum engineering deal with drilling, formation evaluation, production, reservoir engineering, computer simulation and enhanced oil recovery.

The curriculum prepares 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 UAF petroleum engineering department offers modern and challenging degree programs.

The M.S. program is intended to provide students with an advanced treatment of petroleum engineering concepts. Students may choose either a thesis or non-thesis option. Research and teaching assistantships are available.

A doctoral degree program is offered with concentration in petroleum engineering for qualified students (see Engineering). Contact the graduate program coordinator or the petroleum engineering department for more information.

Graduate Program — M.S. Degree

1. Complete the following admission requirement:
a. Complete a B.S. degree in engineering or the natural sciences.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Complete the thesis or non-thesis requirements:

Thesis

a. Complete four of the following:
PETE F607—Advanced Production Engineering.....3
PETE F610—Advanced Reservoir Engineering.....3
PETE F621—Applied Reservoir Characterization.....3
PETE F630—Water Flooding.....3
PETE F656—Advanced Petroleum Economic Analysis 3
PETE F661—Applied Well Testing.....3
PETE F662—Enhanced Oil Recovery 3
PETE F663—Applied Reservoir Simulation.....3
PETE F665—Advanced Phase Behavior.....3
PETE F666—Drilling Optimization 3
PETE F670—Fluid Flow Through Porous Media 3
PETE F680—Horizontal Well Technology 3
PETE F683—Natural Gas Processing and Engineering 3
PETE F684—Computational Methods in Petroleum Engineering.....3
PETE F685—Non-Newtonian Fluid Mechanics 3
PETE F689—Multiphase Fluid Flow in Pipes.....3
b. Complete the following:
PETE F699—Thesis.....6
Elective courses*.....12
c. Minimum credits required.....30

Non-Thesis

a. Complete four courses from those in the thesis option.....12
b. Complete the following:
PETE F698—Engineering Project 6
Electives* 18
c. Minimum credits required.....36

* *Electives are chosen with approval of graduate advisory committee.*

PHYSICS

College of Natural Science and Mathematics
Department of Physics
907-474-7339
www.uaf.edu/physics/

M.S., M.A.T., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 – 33 credits; M.A.T.: 36 credits; Ph.D.: 18 thesis credits

The science of physics is concerned with the nature of matter and energy in all physical systems, from elementary particles to the

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structure and origin of the universe. Physics, together with mathematics and chemistry, provides the foundation for work in all fields of the physical sciences and engineering, and contributes greatly to other disciplines such as the biosciences and medicine.

Advanced study at the graduate level is offered in various areas of physics and applied physics, including many of the research specialties found at the UAF's Geophysical Institute. Faculty and student research programs currently emphasize 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, condensed matter physics, complex dynamics of non-linear systems, ice physics and infrasonics.

The physics department is also responsible for the graduate degree programs in general science, computational physics and space physics. These programs are also described in this catalog.

Graduate Program — M.S. Degree

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete the thesis or non-thesis requirements:

Thesis

a. Complete the following:
PHYS F699—Thesis.....6 – 12
b. Complete four of the following:
PHYS F611—Mathematical Physics I.....3
PHYS F612—Mathematical Physics II.....3
PHYS F621—Classical Mechanics.....3
PHYS F622—Statistical Mechanics.....3
PHYS F631—Electromagnetic Theory.....3
PHYS F632—Electromagnetic Theory.....3
PHYS F651—Quantum Mechanics.....3
PHYS F652—Quantum Mechanics.....3
c. Complete 12 credits from the following:
Approved PHYS F600-level courses
Approved ATM F600-level courses
d. Minimum credits required.....30

Non-Thesis

a. Complete the following:
PHYS F698—Research.....3 – 6
Approved courses.....18
b. Complete four of the following:
PHYS F611—Mathematical Physics I.....3
PHYS F612—Mathematical Physics II.....3
PHYS F621—Classical Mechanics.....3
PHYS F622—Statistical Mechanics.....3
PHYS F631—Electromagnetic Theory.....3
PHYS F632—Electromagnetic Theory.....3
PHYS F651—Quantum Mechanics.....3
PHYS F652—Quantum Mechanics.....3
c. Minimum credits required*.....33

* *At least 30 credits must be regular course work.*

Graduate Program — M.A.T. Degree

1. Complete the general university requirements (page 198).
2. Complete the M.A.T. degree requirements (page 204).
3. Contact the department head for specific degree requirements.
4. Minimum credits required.....36

Graduate Program — Ph.D. Degree

1. Complete the general university requirements (page 198).
2. Complete the Ph.D. degree requirements (page 203).*
3. Complete and pass a written and oral comprehensive examination.
4. Minimum credits required.....18

* *Complete in accordance with physics department's policies and procedures manual for graduate students.*

See General Science.
See Physics, Computational.
See Physics, Space.

PHYSICS, COMPUTATIONAL

College of Natural Science and Mathematics
Department of Physics
907-474-7339
www.uaf.edu/physics/

M.S. Degree

Minimum Requirements for Degree: 30 – 33 Credits

Computational modeling and simulations have become powerful tools in many science disciplines. For example, computational physics includes numerical modeling and computer simulations for physical processes in Earth's upper atmosphere and space environment, and for complex (non-linear) biological and physical systems.

Computational physics requires expertise in advanced computing environments, in the relevant mathematical foundations and in the specific physics discipline. This M.S. degree program is directed toward students with undergraduate academic backgrounds in physics or other closely associated fields, such as engineering, that have the appropriate physics course work. This degree is relevant for students seeking careers in any areas that require expertise in the modeling and simulation of physical systems.

Graduate Program — M.S. Degree

1. Complete the following admissions requirements:
   a. Complete a B.S. degree in physics.
   b. Complete MATH F421 and MATH F422.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Complete the thesis or non-thesis requirements:

Thesis Option

a. Complete the following
PHYS F611—Mathematical Physics I.....3
PHYS F612—Mathematical Physics II.....3
PHYS F629—Methods of Numerical Simulation in Fluids and Plasma.....3
PHYS F699—Thesis.....6 – 12
b. Complete approved PHYS F600-level courses.....6
c. Complete at least 3 credits from the following:
Approved MATH F600-level courses (excluding MATH/PHYS F611 and F612).....3
Approved CS F600-level courses.....3
d. Minimum credits required*.....30

** At least 24 credits must be from regular course work for thesis option.*

Non-Thesis Option

a. Complete the following
PHYS F611—Mathematical Physics I.....3
PHYS F612—Mathematical Physics II.....3
PHYS F629—Methods of Numerical Simulation in Fluids and Plasma.....3
PHYS F698—Research.....3 – 6
b. Complete approved PHYS F600-level courses.....9

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c. Complete at least 3 credits from the following:
Approved MATH F600-level courses (excluding MATH/PHYS F611 and F612) 3
Approved CS F600-level courses 3
d. Minimum credits required* 33

* *At least 30 credits must be from regular course work for non-thesis option.*

See Physics.
See Physics, Space.

PHYSICS, SPACE

College of Natural Science and Mathematics
Department of Physics
907-474-7339
www.uaf.edu/physics/

M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 – 33 credits; Ph.D.: 18 thesis credits

Space physics focuses on the physics of upper atmospheres, ionospheres, magnetospheres and the interplanetary medium. It includes core physics courses and specialty courses in space physics, aeronomy, magnetospheric and auroral physics, and advanced plasma physics. The specialty courses support graduate research with faculty members at UAF's Geophysical Institute, and include areas such as numerical simulations and time-series analysis. Additional courses such as radiative transfer and physics of fluids provide added breadth.

Graduate Program — M.S. Degree

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete four of the following:
PHYS F626—Fundamentals of Plasma Physics.....3
PHYS F627—Advanced Plasma Physics.....3
PHYS F629—Methods of Numerical Simulation in Fluids and Plasma.....3
PHYS F672—Magnetospheric Physics 3
PHYS F673—Space Physics.....3
4. Complete the thesis or non-thesis requirements:

Thesis

a. Complete the following:
PHYS F699—Thesis.....6 – 12
Approved PHYS electives.....12
b. Minimum credits required.....30 – 33

Non-Thesis

a. Complete the following:
Approved PHYS electives.....18
PHYS F698—Research.....3 – 6
b. Minimum credits required.....30 – 33

Graduate Program — Ph.D. Degree

1. Complete the general university requirements (page 198).
2. Complete the Ph.D. degree requirements (page 203).*
3. Complete and pass a written and oral comprehensive examination.
4. Minimum credits required.....18

* *Complete in accordance with the physics department's policies and procedures manual for graduate students.*

See Physics.

PSYCHOLOGY, CLINICAL-COMMUNITY

College of Liberal Arts
Department of Psychology
907-474-7012
ayphd@uaa.alaska.edu
fypsyphd@uaf.edu
http://psyphd.alaska.edu

Ph.D. Degree

Minimum Requirements for Degree: 115 credits

The Ph.D. program in clinical-community psychology with a rural, indigenous emphasis is a partnership between the departments of psychology at UAF and UAA. Although the degree is awarded by UAF, the only doctoral degree granting institution in the UA system, students can complete the entire degree program in residence at UAA. All program courses are co-taught across campuses via video conference and all program components are delivered by faculty at both campuses. The student experience is identical regardless of students' city of residence (Fairbanks or Anchorage). The program focus includes clinical, community and cross-cultural psychology with an emphasis on indigenous, Alaska Native and American Indian psychology. As a UAF-UAA partnership, the program integrates the strengths and resources of both campuses to advance academic excellence, promote innovative and practical research, and provide solid graduate training in clinical-community psychology.

The program ensures that graduates have obtained the full range of clinical training mandated for doctoral-level clinical psychologists and will be adequately prepared for licensure as psychologists. Accreditation for the program is being sought from the American Psychological Association as soon as eligibility has been reached.

Students apply to the joint Ph.D. program in clinical-community psychology at both UAA and UAF. All applicants submit identical application materials to both institutions; materials are collected and evaluated by the joint UAA/UAF Ph.D. admissions committee which makes admissions recommendations to the dean of the UAF graduate school. Applicants may specify a preference for either campus as a location for their studies. For more information about the application process, visit the program website at http://psyphd.alaska.edu.

Graduate Program — Ph.D. Degree

Admission Requirements

1. Application deadline: Received by Dec. 15 for the following fall admission. This is the only opportunity for program admission each year.
2. Compliance with the university requirements for a doctoral degree and admission to graduate studies as detailed in the UAF catalog.
3. Minimum of a bachelor's degree (B.S. or B.A. or B.Ed.); major in psychology or related field preferred. All requirements for bachelor's degree must be completed by June 30 prior to matriculation.
4. Minimum undergraduate grade point average of 3.0.
5. Minimum 3.0 grade point average in major and in all psychology courses.
6. Course work in the areas of abnormal psychology, statistics, research methods and one of the following: personality, clinical psychology, social psychology or community psychology. All prerequisite course work must be completed by June 30 prior to matriculation.
7. Letter of intent describing the applicant's interest and purpose in studying clinical-community psychology, the reasons why a Ph.D. in clinical-community psychology at UAA/UAF is sought

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at this point in the applicant's professional development, and demonstrating an understanding of relevant professional ethics.

8. Professional vita, including documentation regarding academic, research and professional experiences, special projects and activities, and recognitions or honors.
9. Three professional references (preferably curriculum or research advisors, major course instructors with whom the student had contact in more than one course, and/or supervisors).
10. Disclosure statement, located at http://psyphd.alaska.edu/admissions.htm, must accompany the application to the program. Lifetime criminal background check must be submitted by students invited to a personal interview at least two weeks prior to the interview.

Graduation Requirements

1. Complete the general university requirements (page 198).
2. Complete the program and additional requirements listed below:

Program Requirements

Students must complete 26 required courses (for a total of 70 credits), 18 credits of dissertation, 18 credits of predoctoral internship and 9 credits of electives. Students must accumulate a minimum of 115 credits to graduate and must have completed all required course work. Students entering the program with a masters degree in psychology or related field must complete at least two years of full-time course work, 18 credits of dissertation, and one year of predoctoral internship, all approved by the student's advisory committee.

3. Cultural Immersion: During their first year in the Ph.D. program, students must participate in a cultural immersion experience as defined by program faculty. This experience will be coordinated by the directors of clinical training (DCTs) and will also be attended by at least one faculty member per campus who teaches in the Ph.D. program. The experience is not graded but must be completed before students are allowed to register for courses.
4. Complete the following required courses:
   PSY F601—Clinical/Community/Cross-Cultural Integration Seminar (3 years, 1 credit per year).....3
   PSY F602—Native Ways of Knowing.....3
   PSY F603—Alaska and Rural Psychology 3
   PSY F604—Biological and Pharmacological Bases of Behavior.....3
   PSY F605—History and Systems 1
   PSY F607—Cognition, Affect and Culture.....3
   PSY F611—Ethics and Professional Practice.....3
   PSY F612—Human Development in a Cultural Context 3
   PSY F616—Program Evaluation and Community Consultation I.....3
   PSY F617—Program Evaluation and Community Consultation II.....3
   PSY F622—Multicultural Psychopathology 3
   PSY F623—Intervention I.....3
   PSY F629—Intervention II 3
   PSY F632—Community Psychology Across Culture 3
   PSY F633—Tests and Measurement in Multicultural Context..3
   PSY F639—Research Methods.....3
   PSY F652—Practicum Placement — Clinical I 3
   PSY F653—Practicum Placement — Clinical II.....3
   PSY F657—Quantitative Analysis 3
   PSY F658—Qualitative Analysis.....3
   PSY F672—Practicum Placement — Community I 3
   PSY F673—Practicum Placement — Community II 3
   PSY F679—Multicultural Psychological Assessment I.....3
   PSY F681—Substances of Abuse in Alaska 1
   PSY F682—Substance Abuse Assessment and Treatment Planning.....1
   PSY F683—Clinical Interventions in Substance Abuse.....1
   PSY F686—Predoctoral Internship.....18
   PSY F699D—Dissertation.....18
   Electives.....9
5. Minimum credits required:.....115

Additional Requirements

6. *Clinical-Community Competency:* Students must demonstrate clinical-community competency before being allowed to apply for internship. Clinical competency is demonstrated through preparation of a clinical-community portfolio that will be evaluated by an ad hoc committee consisting of four clinically trained faculty members (two per campus) who teach in the doctoral program. Criteria for the portfolio will be clearly defined and samples will be provided for students.
7. *Research Competency:* Students must demonstrate research competency before being allowed to register for dissertation credits. Research competency is demonstrated through preparation of a research portfolio that will be evaluated by an ad hoc committee consisting of four research-trained faculty members (two per campus) who teach in the doctoral program. Criteria for the portfolio will be clearly defined and samples will be provided for students.
8. *Advancement to Candidacy:* Before students are allowed to register for dissertation credits, they will be reviewed for performance by the joint UAA/UAF Ph.D. committee, using existing university standards and forms for advancement to candidacy. Review will be based on faculty experience with students to date, submitted paperwork and student's progress through the program. Feedback from the review will be provided to the student by her or his advisor.
9. *Doctoral Dissertation Proposal Defense:* Before commencing data collection for a dissertation project, students must defend their proposal to their dissertation committee. The defense must be based on a written dissertation proposal to be distributed to the dissertation committee after approval by the dissertation chair. The defense will be an oral presentation to the committee by the student and will not be a public meeting. For data-collection-based dissertations, the proposal must also be approved by the UAA or UAF Institutional Review Board before data collection can commence.
10. *Doctoral Dissertation:* A doctoral dissertation must be carried out successfully and approved by a doctoral dissertation committee. The dissertation committee will consist of at least four members. It is recommended that the dissertation chair be on the same campus as the student. There must be at least one committee member from each psychology department at UAF and UAA. Content areas can vary widely, but must be related to clinical, community, or cross-cultural issues and applicable in Alaska settings.
11. *Advancement to Internship:* Students must apply to the local director of clinical training (DCT) before being permitted to apply for a predoctoral internship. DCTs will review the students' course work, assure that all prior milestones have been mastered (i.e., clinical-community competency, research competency, doctoral dissertation defense and advancement to candidacy) before approving the student for internship and before writing a letter of support for the student (typically

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required by all approved internship sites). Lifetime criminal background check must also be completed before students can advance to internship.

12. *Predoctoral Internship:* A full-time, one-year predoctoral internship is required. This internship should meet the criteria laid out by the American Psychological Association; selection of an Association of Psychology Postdoctoral and Internship Centers-approved internship is encouraged. Placements in Alaska are preferred, but not required.
13. Strict compliance with APA ethical guidelines is required throughout participation in the degree program. Violations can result in immediate dismissal from the program and failure to graduate. Completion of an annual disclosure statement is also required. Affirmative answers may result in dismissal from the program and failure to graduate. The disclosure statement may be viewed at http://psyphd.alaska.edu.

RURAL DEVELOPMENT

College of Rural and Community Development
Department of Alaska Native Studies and Rural Development
Fairbanks Campus 907-474-6528/888-574-6528 toll-free
Anchorage office 907-279-2700/800-770-9531 toll-free
Bristol Bay Campus 907-842-8316
Chukchi Campus 907-442-3400
Interior-Aleutians Campus 907-474-5439
Kuskokwim Campus 907-543-4500
Northwest Campus 907-443-2201
www.uaf.edu/danrd/ma-program/

M.A. Degree

Minimum Requirements for Degree: 30 credits

The Department of Alaska Native Studies and Rural Development M.A. program is designed to educate leaders who understand the dynamic relationship of rural Alaska with the global economy and who have professional skills in areas of leadership, business development, administration and conflict management. Graduates typically take positions with tribal and municipal governments, fisheries, tourism, Native corporations, regional health corporations or non-profits, state/federal agencies, or other private businesses.

Graduate degree students gain a broader theoretical understanding of development processes in Alaska and the circumpolar North. Graduate students complete a thesis or applied community development project, and have opportunities for international study and research.

Students can earn the M.A. degree either on the Fairbanks campus or through distance delivery. Special application requirements and deadlines apply for distance M.A. degree programs. For more information contact the department toll-free 800-770-9531 or visit www.uaf.edu/danrd/ma-program/.

Graduate Program — M.A. Degree

1. Complete the general university requirements (page 198).
2. Complete the master's degree requirements (page 202).
3. Complete the following core courses:
   RD F600—Circumpolar Indigenous Leadership Symposium ...3
   RD F601—Political Economy of the Circumpolar North.....3
   RD F625—Community Development Strategies: Principles and Practices 3
   RD F650—Community-Based Research Methods 3
   RD F651—Management Strategies for Rural Development 3
4. Complete 9 – 12 elective credits at the F600-level (up to 6 credits may be at the F400-level with approval from the graduate committee):
   RD F425—Cultural Impact Analysis 3
   RD F652—Indigenous Organization Management 3
   RD F655—Circumpolar Health Issues 3
   ANTH F610—Northern Indigenous Peoples and Contemporary Issues 3
   CCS F608—Indigenous Knowledge Systems 3
5. Complete one of the following:
   Research Project.....6
   Thesis.....6 – 9
6. Minimum credits required.....30

SCIENCE MANAGEMENT

College of Engineering and Mines
Department of Civil and Environmental Engineering
907-474-6121
www.uaf.edu/esm/

M.S. Degree

Minimum Requirements for Degree: 30 credits

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 management problems.

Graduate Program — M.S. Degree

1. Complete the following admission requirements:
   a. Complete a bachelor's degree in a scientific field.
   b. On-the-job professional experience is recommended.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Present project reports which provide comprehensive analysis and propose solutions to a situation in an engineering or scientific management setting. Pass an oral comprehensive examination.
5. Complete courses from the four main engineering management subject areas as follows:
   a. Human Element (two courses required)
      ESM F601—Managing and Leading Engineering Organizations.....3
      BA F607—Human Resources Management.....3
   b. Project Management (two courses required)
      ESM F609—Project Management (3)
      ESM F608—Legal Principles for Engineering Management (3)
      CE F620—Civil Engineering Construction (3).....6
   c. Quantitative Methods (one course required)
      ESM F622—Engineering Decisions (3)
      or ESM F620—Statistics for ESM (3)
      or ESM F621—Operations Research (3) 3
   d. Financial (two courses required)
      ACCT F602—Accounting for Managers 3
      ESM F605—Engineering Economic Analysis*.....3
6. Complete the following:
   ESM F684—Engineering/Science Management Project 3

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7. Minimum credits required 30

Note: Balance of credits may be managerial or technical electives as approved by the student's graduate advisory committee.

* *May be waived with prior undergraduate engineering economics course.*

See Arctic Engineering.

See Engineering for Ph.D. program.

See Engineering Management.

See Environmental Engineering and Environmental Quality Science.

SOFTWARE ENGINEERING

College of Engineering and Mines
Department of Computer Science
907-474-2777
www.dms.uaf.edu

M.S.E. Degree

Minimum Requirements for Degree: 30 credits

Software engineering is defined as "the application of a systematic, disciplined, quantifiable approach to the development, operation and maintenance of software" (IEEE Standard Glossary of Software Engineering Terminology).

Graduates of the UAF M.S.E. program will be prepared to develop high-quality software products which meet required deadlines within budget constraints, understand complex software-intensive systems and to participate in their development and application while adopting different process roles. Those roles include software architecture, design, construction, test and project management.

Local, national and international employment opportunities for software engineers continue to be numerous.

Graduate Program — M.S.E. Degree

1. Complete the UAF admission process including the following:
   a. Submit GRE general scores.
   b. Complete at least a bachelor's degree at an accredited institution with a GPA of at least 3.0. Complete course work or possess practical knowledge at the advanced undergraduate level in each of the following areas: computer organization, discrete mathematics, algorithms and data structures, object-oriented programming (e.g., C++, FORTRAN95, or Java), and an in-depth knowledge of at least two of the following topics; compiler techniques, comparative programming languages, operating systems or database systems.
   c. Have at least two years of relevant software development experience or equivalent.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Complete the following:
   CS F602—Software Project Management 3
   SWE F671—Advanced Software Engineering 3
   SWE F673—Software Requirements Engineering 3
   SWE F674—Software Architecture 3
   SWE F690—Graduate Seminar and Project 3
   SWE F691—Graduate Seminar and Project 3
   Approved electives 12
5. Minimum credits required 30

Note: Each student must take and pass a comprehensive examination covering material from all of the required courses listed in item four above. CS F670/SWE F670—Computer Science for Software Engineers is required as a deficiency course for students without B.S. in computer science.

See Computer Science.

STATISTICS

College of Natural Science and Mathematics
Department of Mathematics and Statistics
907-474-7332
www.dms.uaf.edu

Graduate Certificate, M.S. Degree

Minimum Requirements for Certificate: 12 credits; M.S.: 30 credits

Statistics is a collection of methods and theories used to make decisions or estimate 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.

As a post-baccalaureate program, the certificate in statistics is equivalent to a full year of graduate statistics courses and is ideal for current graduate students in disciplines other than statistics (especially the sciences). The graduate certificate in statistics encourages a more in-depth study of statistics and provides students a credential recognizing their quantitative expertise.

The M.S. degree program in statistics builds upon UAF's strength in the sciences and our setting in Alaska by introducing a strong quantitative alternative or supplement to existing programs. The curriculum is built around four statistics core courses and flexibility in selection of elective courses. The core courses are designed to blend mathematical statistics course work typical of most M.S. programs in statistics with real applications. We believe this blending provides a substantial improvement in the graduate's skills.

Graduates of this program could be labeled quantitative biologists, biometricians, quantitative geologists, geostatisticians, or mathematical statisticians depending upon their specific course work. In addition, this program prepares individuals for Ph.D. level work in statistics or their area of application.

The statistics program is administered by the Department of Mathematics and Statistics.

Graduate Program — Graduate Certificate

1. Complete the following admission requirements:
   a. Hold a baccalaureate degree from an accredited institution
   b. Complete MATH F200X, MATH F201X and MATH 202X or equivalent*
   c. Complete STAT F401 or equivalent*
2. Complete the general university requirements (page 198).
3. Complete the graduate certificate requirements (page 202).
4. Complete the following:
   STAT F651—Statistical Theory I 3
5. Complete one of the following options:
   a. Complete one of the following:
      STAT F652—Statistical Theory II (4)
      or STAT F653—Statistical Theory III (3) .....3 – 4
   b. Complete two of the following:
      STAT F602—Experimental Design 3
      STAT F605—Spatial Statistics 3
      STAT F611—Time Series 3
      STAT F621—Distribution-Free Statistics 3
      STAT F631—Categorical Data Analysis 3
   c. Complete one of the following electives to total 12 credits for the certificate
      STAT F641—Bayesian Statistics 3
      PHYS F628—Digital Time Series Analysis 3

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WLF/FISH F625—Analysis of Vertebrate Populations Survival and Movement 3
FISH F601—Quantitative Fishery Science 3
ECON F626—Econometrics 3
ECON F627—Advanced Econometrics....3
ESM F621—Operations Research....3
MATH F641—Real Analysis 4
MIN/GE F635—Geostatistical Ore Reserve Estimation 3

6. Minimum credits required....12

* *Student must earn a C grade or better in each course.*

Graduate Program — M.S. Degree

1. Complete the following admission requirements:
   a. Submit three letters of recommendation concerning the applicant's educational background and quantitative training.
   b. Submit complete transcripts for all college-level work.
   c. Submit a resume.
   d. Submit a written statement of goals.
   e. Submit GRE scores.
   f. The applicant must have completed a bachelor's degree from an accredited institution with a GPA of at least 3.0.
   g. Must have completed the following courses or their equivalent with a B grade or better: full calculus sequence (MATH F200X, F201, F202); or students completing MATH F262X or F272 must take MATH F201X and F202X before acceptance; and a course in linear algebra (MATH F314), at least one introductory statistics or probability course (STAT F200X, F300 or MATH F371, F408). Students lacking MATH F314 may be accepted on probation.
2. Complete the general university requirements (page 198).
3. Complete the master's degree requirements (page 202).
4. Complete the following statistics (core) courses:
   STAT F651—Statistical Theory I....3
   STAT F652—Statistical Theory II 4
   STAT F653—Statistical Theory III—Linear Models 3
   STAT F654—Statistical Consulting Seminar 1
   STAT F698—Project 3
5. Complete two of the following courses:
   STAT F461—Applied Multivariate Statistics....3
   STAT F602—Experimental Design 3
   STAT F605—Spatial Statistics....3
   STAT F621—Distribution Free Statistics....3
   STAT F631—Categorical Data analysis....3
   STAT F641—Bayesian Statistics....3
   STAT F661—Sampling Theory 3
   STAT F611—Time Series 3
6. Complete at least 6 credits of approved courses from an application area or courses with substantial statistical and/or mathematical content.*
7. Minimum credits required....30

* *Students working in subject areas involving significant non-English literature will be expected to read the appropriate foreign language.*

Note: Each student must take and pass a two-part comprehensive exam. The first part, written by the statistics faculty, is a written exam (not a take-home exam) covering the material in the core statistics courses. The second part is an oral exam covering follow-up questions from the written exam as well as any material from courses the student has taken along with their project.

WILDLIFE BIOLOGY AND CONSERVATION

College of Natural Science and Mathematics
Department of Biology and Wildlife
907-474-7671
www.bw.uaf.edu

M.S. Degree

Minimum Requirements for Degree: 30 credits

The geographic location of the university is particularly advantageous for the study of wildlife biology. 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 arctic tundra.

Adequate study collections of plants and animals are available, and a 2,000-acre study area is near the campus. Wildlife biology students have ample opportunity for close association with the personnel of the Alaska Cooperative Fish and Wildlife Research Unit, Institute of Arctic Biology and several local offices of federal and state conservation agencies. These agencies often provide support for graduate student projects, and program faculty usually hire a number of students for summer field work. Exceptional opportunities are available for students to gain experience and make job connections.

The Department of Biology and Wildlife, the Institute of Arctic Biology, and the Alaska Cooperative Fish and Wildlife Research Unit cooperate in offering graduate work leading to the M.S. degree. Detailed information on the graduate program in wildlife biology and management is available from the chair of the wildlife program.

The Alaska Cooperative Fish and Wildlife Research Unit and Institute of Arctic Biology offer a limited number of research assistantships. Teaching assistantships are available in the Department of Biology and Wildlife.

Graduate Program — M.S. Degree

1. Complete the following admission requirement:
   a. Submit scores from both the GRE general test (required) and the GRE subject test in biology (highly recommended).
   b. If English is not your native language, submit scores from both the Test of Spoken English (TSE) and the Test of Written English (TWE), as well as TOEFL scores. Requests, including justification, for exceptions to this requirement should be made to the chair of the department.
2. Complete the general university requirements (page 198).
3. Complete the M.S. — with Thesis degree requirements (page 204).
4. As part of the M.S. degree requirements, complete and pass the departmental written and oral master's comprehensive examination.
5. Minimum credits required....30

See Biological Sciences.

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Course Descriptions

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Associate Professor Jonathan Runstadler lectures in his immunology class in the Bunnell Building on the Fairbanks campus.

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How to Read the Course Descriptions

This section contains complete information for all UAF courses. Unless otherwise indicated, course frequency refers to the offering of courses at the Fairbanks campus. The courses listed in this catalog are not offered at all UAF sites but may be offered if demand warrants and qualified faculty are available.

Courses are regularly offered at Bristol Bay Campus at Dillingham, Chukchi Campus at Kotzebue, Kuskokwim Campus at Bethel and Northwest Campus at Nome. Through the Interior-Aleutians Campus, courses are available at Fort Yukon, Galena, McGrath, Nenana, Tok and Unalaska. Information about the frequency of courses at these community 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 a student typically takes the course. For example, ENGL F111X is usually for first-year students and ENGL F318 is for third-year students. Freshman and sophomore students are cautioned to register for upper-division (300- and 400-) level courses only if they have 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 that do not apply to associate, baccalaureate or graduate degree requirements.

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 the courses are required in the first two years of their curriculum as printed in this catalog.

500-599—Post-baccalaureate professional courses

500-level courses are intended as post-baccalaureate experiences for professionals to continue their education at a level distinct from graduate level education. 500-level special topics and independent study courses (593, 595, 597) do not apply toward any degree, certification or credential program. 500-level 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 approval of the instructor. Students may not apply such a course to requirements for both a baccalaureate and a graduate degree.

STACKED AND CROSS-LISTED COURSES

Some courses are offered by an interdisciplinary program (such as Women's Studies) with a specific disciplinary content (e.g., History). Some courses containing interdisciplinary content are sponsored by several departments (e.g., Theatre/Art/Music F200X). These courses are "cross-listed" and are designated in the class listings by "*cross-listed with____*."

Courses are also sometimes offered simultaneously at different levels (for example: 100/200 or 400/600) with the higher level credit requiring additional effort and possibly a higher order of prerequisites from students. Such courses are referred to as "stacked" and are designated in the class listings by "*stacked with ___*." In the case of 400/600-level stacked courses, graduate student enrollment and a higher level of effort and performance is required on the part of students earning graduate credit.

Courses simultaneously stacked and cross-listed are designated in the class listing as "*Stacked with____ and cross-listed with____*."

For all stacked courses, the course syllabus (not the catalog) must stipulate course content and requirements for each level. The catalog should indicate the difference in prerequisites for each level.

Graduate students may not take any 600-level courses for credit if they have already received 400-level credit for that course in their undergraduate work. Individual exceptions to this rule include those courses where there has been a major shift in focus, and should be judged by the instructor and the department.

SPECIAL OR RESERVED NUMBERS

Courses with the suffix X (ENGL F111X, MATH F103X), meet specific baccalaureate core requirements. Courses with suffixes W or O meet upper-division writing intensive or oral communication intensive course requirements for the baccalaureate core.

Courses identified with numbers ending in -92 are seminars, covering various topics which may include group discussions and guest speakers; ending in -93 are special topics courses, normally offered one time only; -94, trial courses, offered in anticipation of becoming a permanent course; -95, special topics summer session courses, offered only during the summer; -97, individual study in subject areas not normally available; -98, non-thesis research/project, preparing for professional practice; and -99, thesis/dissertation, preparing for scholarly or research activity.

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Courses identified with these special or reserved numbers may be available at all levels (e.g., 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 Provost (e.g., 600-level offerings in areas without approved graduate programs or 300- and 400-level courses in areas without approved baccalaureate programs). These courses may be repeated for credit.

Course Credits

One credit represents satisfactory completion of 800 minutes of lecture, 1,600 or 2,400 minutes of laboratory (or studio or other similar activity), whichever is appropriate. (It is understood that an average student will be expected to spend 1,600 minutes of study and preparation outside of class in order to meet the learning objectives for the unit of credit in lecture.)

The following standards establish the minimum requirements for an academic unit of credit:

1. 800 minutes of lecture (plus 1,600 minutes of study)
2. 1,600 or 2,400 minutes of laboratory (or studio or other similar activity)
3. 2,400–4,800 minutes of supervised practicum
4. 2,400–8,000 minutes of internship (or externship, clinical)
5. 2,400–4,800 minutes of supervised scholarly activity

Credit hours may not be divided, except 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. Any course compressed to less than six weeks must be approved by the college or school's curriculum council. Furthermore, any core course compressed to less than six weeks must be approved by the core review committee.

Following the title of each course, the number of credits is listed for each semester. Thus "3 credits" means three credits may be earned. Credit may not be given more than once for a course unless the course has been designated as repeatable for credit. Figures in parentheses at the end of course descriptions indicate the number of lecture; laboratory; and practicum, internship or scholarly activity hours the class meets each week for one semester. The first number represents lecture hours; the second, laboratory; and the third, practicum, internship or scholarly activity. For example (2+3) indicates that a class has two hours of lecture and three of laboratory work each week. A designation of (1+0+6) indicates that the course meets for one hour each week of lecture and 6 hours each week of practicum, internship or other scholarly activity.

Identifying Courses

X—The Baccalaureate Core

Courses used to satisfy general baccalaureate core requirements have course numbers ending with the suffix X. For example, English F111X and Communication F141X meet specific core requirements. See baccalaureate core requirements for a listing of other specific courses.

O—Oral Communication Intensive Course
W—Writing Intensive Course

Courses meeting upper-division writing and oral communication intensive requirements for the baccalaureate core are identified in the course description section of the catalog with the suffixes O and W.

Two courses designated O/2 are required to complete the oral communication intensive requirement.

Specific Degree Requirements

Courses that may be used to satisfy specific degree requirements (e.g., humanities elective for the B.A. degree, or natural science elective for the B.S. degree) are identified in the course description section by the following degree requirement designators:

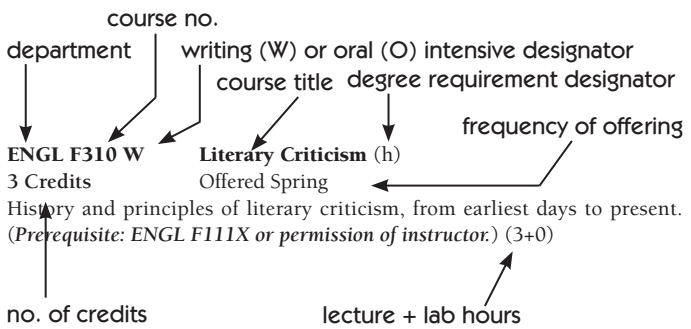
h—humanities
s—social science
m—mathematics
n—natural science

For example, you may use ANTH F309—Arctic Prehistory (s), to satisfy the "social science elective" requirement for a bachelor of arts degree. Some courses, including all special topics and individual study courses, are not given course classifications.

Course Frequency

A frequency of offering designator such as "Offered Fall" or "Offered Alternate Spring" follows many course descriptions. Every effort is made to ensure this designator is correct. However, students should review the current class schedule or check with individual departments for the most accurate and up-to-date information on future course offerings.

A Sample Course Description



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ACCOUNTING

Students enrolling in School of Management courses are expected to have completed the necessary prerequisites for each course.

A per semester student computing facility user fee will be assessed for student enrolling in one or more School or Management courses (AIS, ACCT, BA and ECON) except ECON F100X. This fee is in addition to any materials fees.

ACCT F261 **Accounting Concepts and Uses I** (s)
3 Credits
An understanding of basic financial statements from a user perspective (investors, managers and creditors) is strongly emphasized. Topical coverage of financial and managerial issues is integrated throughout the semester. Material is presented in a fashion that promotes development of communication skills. The conceptual approach used in this course will sensitize the student to the implications of accounting decisions related to business transactions, while avoiding the detailed procedures that only accountants need to know. ***Prerequisites: Sophomore standing or higher; placement, concurrent enrollment, or completion of MATH at the F100-level or above.*** (3+0)

ACCT F262 **Accounting Concepts and Uses II**
3 Credits
Continuation of ACCT F261 with introduction of advanced topics. ***Prerequisites: ACCT F261.*** (3+0)

ACCT F263 **Accounting Processes**
1 Credit
Laboratory covering processes and procedures of accounting. Includes journals, ledgers and recording techniques, and understanding of contemporary accounting issues. ***Prerequisites: AIS F101; ACCT F261; ACCT F262 or concurrent enrollment in ACCT F262.*** (3+0)

ACCT F330 **Income Tax**
3 Credits Offered Fall or Spring
Survey of basic concepts of federal taxation with emphasis on taxation of individuals and the impact of taxes on business and investment planning. ***Prerequisites: ACCT F262.*** (3+0)

ACCT F342 **Managerial Cost Accounting**
3 Credits Offered Fall or Spring
Cost accounting with managerial emphasis on planning, control and decision making. Topics include cost-volume profit analysis, costing systems, profit planning, flexible budgets, standard costs, responsibility accounting, inventory costing alternatives and relevant costs for decision making. For accounting majors. Note: No credit may be earned for more than one of ACCT F342 or ACCT F352. ***Prerequisites: ACCT F262.*** (3+0)

ACCT F352 **Management Accounting**
3 Credits Offered Fall or Spring
Business policy profit planning, resource planning, control concepts, reporting for management control and impact of public reporting on management decisions. Note: For non-accounting majors only. No credit may be earned for more than one of ACCT F342 or ACCT F352. ***Prerequisites: ACCT F261; ACCT F262.*** (3+0)

ACCT F356 **Internship in Accounting**
1-3 Credits Offered As Demand Warrants
Supervised accounting work experience in an approved position related to the student's career interests. Number of credits earned depends upon the type of position and time worked. No student may count more than 9 internship credits towards an undergraduate degree, with these credits being electives. Internship credits may not be taken as one of the two required senior-level accounting electives. ***Prerequisites: Permission of the SOM advisor.*** (0+6-14)

ACCT F361 **Intermediate Accounting**
3 Credits Offered Fall
Discussions of financial accounting topics from the perspective of both accounting practice and theory. Working capital and fixed asset accounts are emphasized. Ethical and international accounting issues are emphasized throughout the sequence. ***Prerequisites: ACCT F262.*** (3+0)

ACCT F362 **Intermediate Accounting**
3 Credits Offered Spring
Discussion of financial accounting topics from the perspective of both accounting practice and theory. Long-term liabilities and stockholders equity are emphasized. Ethical and international accounting issues are emphasized throughout. ***Prerequisites: ACCT F361.*** (3+0)

ACCT F401 **Advanced Accounting**
3 Credits Offered Fall or Spring
Accounting for business combinations: parent-subsidiary and home office/branch relationships, partnerships and multinational enterprises. ***Prerequisites: ACCT F362.*** (3+0)

ACCT F404 **Advanced Cost Accounting and Controllership**
3 Credits Offered Fall or Spring
Study of the controllership function with emphasis on advanced cost and managerial accounting topics related to contemporary organizations. ***Prerequisites: ACCT F342.*** (3+0)

ACCT F414 **Governmental and Nonprofit Accounting**
3 Credits Offered Fall or Spring
Accounting for governmental units, public schools, colleges and universities, health care providers, voluntary health and welfare organizations and other nonprofit organizations. ***Prerequisites: ACCT F362; ACCT F452.*** (3+0)

ACCT F430 **Advanced Taxes**
3 Credits Offered Fall or Spring
Advanced study of income taxation, emphasizing federal taxation of corporations and partnerships. ***Prerequisites: ACCT F330.*** (3+0)

ACCT F452 W **Auditing**
3 Credits Offered Fall or Spring
Introduction to the professional standards and procedures applicable to an auditor's examination of financial statements. Compliance and Operational auditing, ethical and legal responsibilities, and international auditing issues emphasized. ***Prerequisites: ACCT F362; AIS F316; ENGL F111X; ENGL F211X or ENGL F213X.*** (3+0)

ACCT F472 **Advanced Auditing**
3 Credits Offered Fall or Spring
Advanced auditing theory and practice. Audit techniques and internal controls. Evaluation of computer systems. Includes contemporary topics, governmental auditing, federal and state single audits. For auditor practitioners and students without field experience in auditing. ***Prerequisites: ACCT F452.*** (3+0)

ACCT F602 **Accounting for Managers**
3 Credits Offered Fall or Spring
A complete and balanced treatment of the concepts, procedures and uses of financial accounting. Coverage includes the accounting cycle, accounting principles, mass processing of transactions, internal control, inventories and merchandising operations, long-lived assets and liabilities, corporate accounting and reporting, partnership accounting, financial statements, funds flow analysis, cost systems for manufacturing operations, and managerial accounting. ***Prerequisites: Graduate standing; or approval of the M.B.A. director.*** (3+0)

ACCT F605 **Contemporary Topics in Accounting**
3 Credits Offered Fall or Spring, As Demand Warrants
An advanced seminar designed to meet the accounting needs of managers. These topics can range from taxes to management control systems. May be taken twice for credit when topic changes. ***Prerequisites: ACCT F602; graduate standing; or permission of the M.B.A. director.*** (3+0)

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ACCT F656 **Internship in Accounting**
1-3 Credits Offered As Demand Warrants
Supervised accounting experience in an approved position related to the student's career interests. (Note: Number of credits earned depend on the type of position and time worked. No graduate student may count more than six internship credits towards a graduate degree with these credits being electives.) ***Prerequisites: M.B.A. standing or approval of MBA director.*** (0+6-14)

ACCOUNTING AND INFORMATION SYSTEMS

Students enrolling in School of Management courses are expected to have completed the necessary prerequisites for each course.

A per semester student computing facility user fee will be assessed for student enrolling in one or more School or Management courses (AIS, ACCT, BA and ECON) except ECON F100X. This fee is in addition to any materials fees.

AIS F101 **Effective Personal Computer Use**
3 Credits
Using and understanding advanced computing software applications. Course develops conceptual and practical knowledge of advanced presentation/communications software, database programs and operating systems. (3+0)

AIS F224 **Advanced MS Excel**
1 Credit Offered As Demand Warrants
Advanced features of the Microsoft Excel spreadsheet program. Includes spreadsheet design and layout, customized graphics, customized reports using database features, optimization/statistical techniques and programming with the Excel macro language. ***Prerequisites: AIS F101 or permission of instructor. Student is assumed to have basic proficiency with Microsoft Excel.*** (1+0)

AIS F225 **Windows Networking and Administration**
1 Credit Offered As Demand Warrants
Network engineering skills required to implement and support the Microsoft Windows OS. Includes installation, configuration, peer-to-peer networking, interoperability with Novell Netware, tuning and troubleshooting. ***Prerequisites: AIS F101; Experience using the Microsoft Windows OS; or permission of instructor.*** (1+0)

AIS F310 **Management of Information Systems**
3 Credits
The role information technology plays in organizations including its impact on information systems, management and business strategy. A conceptual model of system design is introduced and basic business internal controls are surveyed. ***Prerequisites: AIS F101.*** (3+0)

AIS F312 W **Information Systems Technology**
3 Credits Offered As Demand Warrants
Introduction to the hardware and systems software underlying information systems; provides background to understand computer marketing literature and to select among technology alternatives. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X.*** (3+0)

AIS F316 **Accounting Information Systems**
3 Credits Offered Fall or Spring
Accounting systems for business and public entities. Emphasis on internal control functions and design concepts. ***Prerequisites: AIS F101; ACCT F262.*** (3+0)

AIS F410 **Systems Analysis and Program Design**
3 Credits Offered As Demand Warrants
The system development life cycle for database-oriented information systems in both mainframe and microcomputer environments. Includes programming in one or more fourth-generation languages and a term project. ***Prerequisites: AIS F310 or AIS F312.*** (3+0)

AIS F414 **Database Design for Management Information**
3 Credits Offered As Demand Warrants
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. ***Prerequisites: AIS F310 or CS F401.*** (3+0)

AIS F673 **Technology Management**
3 Credits Offered As Demand Warrants
Overview of the skills a manager needs to administer an information systems department, including extensive discussions of current trends in management of IS and the IS industry. ***Prerequisites: Graduate standing or approval of the M.B.A. director.*** (3+0)

AIRFRAME AND POWERPLANT

AFPM F111 **General Airframe and Powerplant**
3 Credits Offered As Demand Warrants
Shop practices, basic math, applied physics, FAA 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. Special fees apply. ***Prerequisites: Experience requirements of FAR 65.77 or permission of instructor.*** (3+0)

AFPM F145 **Basic Mathematics**
1 Credit Offered As Demand Warrants
Review of applied and technical mathematics related to the construction and engines of aircrafts. Common, decimal, fractions and mixed numbers; extracting square roots and raising numbers to a given power; solving ratios, proportions and percentage problems; fundamental algebraic operations. Special fees apply. ***Prerequisites: Admission to Airframe & Powerplant program or permission of instructor.*** (1+0)

AFPM F146 **Basic Electricity**
2 Credits Offered As Demand Warrants
Electrical theory and concepts for the aviation mechanic. Ohm's law, electrical circuits, diagrams, batteries and a variety of electrical components. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (2+0)

AFPM F147 **Physics for Mechanics**
0.5 Credit Offered As Demand Warrants
Applications of mechanics; levers, sound, fluid and heat dynamics. Basic aircraft structures and aerodynamics. (Course does not fulfill natural science requirements for any degree.) Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (0.5+0)

AFPM F148 **Aircraft Drawing**
1 Credit Offered As Demand Warrants
Basic drafting. Drawings, symbols and schematic diagrams, sketches of repairs and alterations, blueprint information, graphs and charts. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (1+0)

AFPM F149 **Fluid Lines and Fittings**
0.5 Credit Offered As Demand Warrants
Rigid and flexible fluid lines and fittings, fabrication and installation. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (0.5+0)

AFPM F150 **Materials and Processes**
2 Credits Offered As Demand Warrants
Basic shop practices, including selection, identification and installation of aircraft hardware and materials, precision measuring tools and operations, basic heat treating processes, forms of nondestructive inspections. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (2+0)

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AFPM F151 Cleaning and Corrosion Control
1 Credit Offered As Demand Warrants
Basic aircraft cleaning materials, methods and corrosion control. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (1+0)

AFPM F152 Federal Aviation Regulations
1 Credit Offered As Demand Warrants
Federal Aviation Regulations for maintenance of aircraft. Maintenance forms and records, publications, privileges and limitations of aircraft mechanics. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (1+0)

AFPM F153 Weight and Balance
1 Credit Offered As Demand Warrants
Weighing procedures, weight, arms, moments, center of gravity computations and placarding. Aircraft loading, required forms, weighing. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (1+0)

AFPM F154 Ground Operations and Servicing
0.5 Credit Offered As Demand Warrants
Starting, moving, servicing, securing and fueling aircraft. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (0.5+0)

AFPM F205 Airframe Structures
3 Credits Offered As Demand Warrants
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. Special fees apply. ***Prerequisites: Experience requirements of FAR 65.77 or permission of instructor.*** (3+0)

AFPM F206 Airframe System and Components
2 Credits Offered As Demand Warrants
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. Special fees apply. ***Prerequisites: Experience requirements of FAR 65.77 or permission of instructor.*** (2+0)

AFPM F215 MOS Powerplant Theory/Maintenance
2 Credits Offered As Demand Warrants
Jet engine fundamentals, analysis and 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. Special fees apply. ***Prerequisites: Experience requirements of FAR 65.77 or permission of instructor.*** (2+0)

AFPM F216 MOS Powerplant System/Components
3 Credits Offered As Demand Warrants
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. Special fees apply. ***Prerequisites: Experience requirements of FAR 65.77 or permission of instructor.*** (3+0)

AFPM F230 Aircraft Electrical Systems
2.5 Credits Offered As Demand Warrants
Wiring, control, indication and protection devices for AC and DC systems. Inspection, troubleshooting service and repair of these systems. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (2.5+0)

AFPM F231 Powerplant Electrical Systems
1.5 Credits Offered As Demand Warrants
Installation, inspection, testing, servicing engine electrical system wiring, controls, indicators and protective devices. Repair and service of electrical generating systems. Special fees apply. (1.5+0)

AFPM F235 Aircraft Reciprocating Engines
4.5 Credits Offered As Demand Warrants
History and development of the aircraft reciprocating engine. Repair, overhaul and inspection of various types of engines. Operation and troubleshooting of engines. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (4.5+0)

AFPM F240 Turbine Engines
2 Credits Offered As Demand Warrants
Development, theory and operation of turbine engines. Engine design, performance, accessories and subsystems. Engine maintenance and overhaul. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (2+0)

AFPM F244 Lubricating Systems
1.5 Credits Offered As Demand Warrants
Identification and selection of lubricants for aircraft powerplants. Inspection, service, troubleshooting and repair of the lubrication systems and components. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (1.5+0)

AFPM F245 Ignition Systems
2 Credits Offered As Demand Warrants
Overhaul, inspection and troubleshooting of reciprocating and gas turbine ignition systems. Repair and bench testing of components. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (2+0)

AFPM F246 Fuel Metering Systems
2 Credits Offered As Demand Warrants
Fundamental operation of fuel metering systems in aircraft powerplants. Technical data to repair and overhaul carburetors and components. Inspecting, troubleshooting and adjusting turbine engine fuel metering systems and electronic fuel controls. Special fees apply. ***Prerequisites: Admission to the A & P Program or permission of instructor.*** (2+0)

AFPM F248 Induction Systems
0.5 Credit
Operation and service of aircraft induction, preheat, anti-ice and supercharger systems. Special fees apply. (0.5+0)

AFPM F249 Powerplant Cooling Systems
0.5 Credit
Inspection, service and repair of engine cooling systems - both air and liquid cooled installations. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (0.5+0)

AFPM F250 Powerplant Exhaust Systems
0.5 Credit
Inspection, service and repair of engine exhaust systems. Includes operations of turbo compounded engines, thrust reversers and noise suppressors. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (0.5+0)

AFPM F251 Fuel Systems
1.5 Credits Offered As Demand Warrants
Inspection, servicing, troubleshooting and repair of aircraft and engine fuel systems and components. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (1.5+0)

AFPM F252 Propellers
2 Credits Offered As Demand Warrants
Identification and nomenclature of aircraft propellers. Operation, control and repair of both reciprocating and turbine engine installations. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (0+0)

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AFPM F253 Transport Category Aircraft
1 Credit Offered As Demand Warrants
Introduction to transport category aircraft systems and components. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (1+0)

AFPM F254 Ice and Rain Control Systems
0.5 Credit Offered As Demand Warrants
Inspection, operation and troubleshooting of de-ice and anti-ice systems. Special fees apply. (0.5+0)

AFPM F255 Fire Protection Systems
0.5 Credit Offered As Demand Warrants
Inspection, servicing, troubleshooting and repair of aircraft and engine fire detection and extinguishing systems. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (0.5+0)

AFPM F256 Communications and Navigation Systems
0.5 Credit Offered As Demand Warrants
Operation of aircraft avionics, autopilots and antennas, including inspection and installation. Special fees apply. (0.5+0)

AFPM F257 Instrument Systems
0.5 Credit Offered As Demand Warrants
Inspection, troubleshooting, removal and replacement of aircraft and engine instruments and indicating systems. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (0.5+0)

AFPM F258 Cabin Atmosphere Control Systems
1 Credit Offered As Demand Warrants
Aircraft pressurization, air conditioning, heating and oxygen systems. Operation, inspection, troubleshooting, service and repair. Special fees apply. (1+0)

AFPM F259 Hydraulic and Pneumatic Systems
1.5 Credits Offered As Demand Warrants
Operation of hydraulic and pneumatic systems and uses in aircraft. Identification of hydraulic fluids, seals, hydraulic and pneumatic control devices, inspection and servicing and troubleshooting. Special fees apply. (1.5+0)

AFPM F260 Aircraft Landing Gear Systems
1.5 Credits Offered As Demand Warrants
Simple and complex landing gear systems. Operation, service and repair of mechanical and hydraulic retraction mechanisms. Wheel, tire and brake service. Aircraft speed and configuration warning systems, electric brake controls, anti-skid systems, landing gear position and warning systems. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (1.5+0)

AFPM F261 Non-Metallic Structures
1 Credit Offered As Demand Warrants
Inspection, service and repair of wood structures. Preliminary and secondary repair of interior and service of plastic, honeycomb, bonded, and composite and laminated structures. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (1+0)

AFPM F262 Aircraft Coverings
1 Credit Offered As Demand Warrants
Selection, application, inspection and testing of fabric and fiberglass coverings and methods of repair. Special fees apply. ***Prerequisites: Admissions to A & P Program or permission of instructor.*** (1+0)

AFPM F263 Aircraft Finishes
0.5 Credit Offered As Demand Warrants
Identification and selection of aircraft finishing materials. Application of paints, dopes, primers and trim. Special fees apply. ***Prerequisites: Admission to A & P Program and permission of instructor.*** (0.5+0)

AFPM F264 Sheet Metal Structures
3 Credits Offered As Demand Warrants
Aircraft sheet metal fabrication, inspection and repair, including rivets and fasteners. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (3+0)

AFPM F265 Aircraft Welding
1.5 Credits Offered As Demand Warrants
Contemporary welding methods on aircraft structures. Oxyacetylene, arc, inert gas and brazing techniques. Inspection of welded structure and safety procedures. Special fees apply. (1.5+0)

AFPM F266 Assembly and Rigging
1.5 Credits Offered As Demand Warrants
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. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (1.5+0)

AFPM F267 Airframe Inspections
0.5 Credit Offered As Demand Warrants
Inspection and return of aircraft to service. Procedural and legal aspects of 100 hour, annual and periodic inspections. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (0.5+0)

AFPM F270 Airframe Testing
0.5 Credit Offered As Demand Warrants
Preparation for the Federal Aviation Administration written, oral and practical exams for the powerplant mechanics' license. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (0.5+0)

AFPM F271 Powerplant Inspections
0.5 Credit Offered As Demand Warrants
Methodology and record keeping for inspection of aircraft reciprocating and gas turbine engines. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (0.5+0)

AFPM F272 Powerplant Testing
0.5 Credit Offered As Demand Warrants
Preparation for the Federal Aviation Administration written, oral and practical exams for the powerplant mechanics' license. Special fees apply. ***Prerequisites: Admission to A & P Program or permission of instructor.*** (0.5+0)

AFPM F325 Inspection Authorization Preparation
2 Credits Offered As Demand Warrants
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. ***Prerequisites: FAA A & P Certificate, meet additional requirements of FAR 65.91.*** (1+2)

ALASKA NATIVE LANGUAGES

Note: Two semester-length courses in a single Alaska Native Language or other non-English language taken at the university level may replace 6 credits in the Perspectives on the Human Condition section of the Core. ANL F141-F142 may be used to meet this requirement but then may not be used to meet humanities degree requirement.

ANL F108 Beginning Athabascan Literacy (h)
1-3 Credits Offered As Demand Warrants
Introduction to reading and writing in one of the Athabascan languages. For speakers of the language who want to become literate. (1-3+0)

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ANL F121 **Conversational Alaska Native Language** (h)
1-3 Credits Offered Fall
Introduction to speaking and understanding one of the Alaska Native languages. Focus on communication in everyday situations. ***Note: Does not satisfy core curriculum requirements.*** (1-3+0)

ANL F122 **Conversational Alaska Native Language** (h)
1-3 Credits Offered Spring
Introduction to speaking and understanding one of the Alaska Native languages. Focus on communication in everyday situations. ***Prerequisites: ANL F121 in the same language or permission of instructor. Note: Does not satisfy core curriculum requirements.*** (1-3+0)

ANL F141 **Beginning Athabascan-Koyukon or Gwich'in** (h)
5 Credits Offered Fall
Introduction to an Alaska Athabascan language. Class will deal with one of the eleven Athabascan languages spoken in Alaska. Literacy and grammatical analysis for speakers. For non-speakers, a framework for learning to speak, read and write the language. (5+0)

ANL F142 **Beginning Athabascan** (h)
5 Credits Offered Spring
Introduction to an Alaska Athabascan language. Class will deal with one of the eleven Athabascan languages spoken in Alaska. Literacy and grammatical analysis for speakers. For non-speakers, a framework for learning to speak, read and write the language. ***Prerequisites: ANL F141 in the same language or permission of instructor.*** (5+0)

ANL F150 **Interpretive Communication** (s)
1 Credit Offered As Demand Warrants
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 sociocultural backgrounds. Kuskokwim Campus only. (1+0)

ANL F151 **Interethnic Communications** (s)
3 Credits Offered As Demand Warrants
Understanding differences in cross-cultural interaction. Application of cross-cultural interactions to various communication settings. Concentrates on Yup'ik ways of communication. Kuskokwim Campus only. (3+0)

ANL F199 **Practicum in Native Language Education**
3 Credits Offered As Demand Warrants
Individualized work experience. Variable credit (depending on the quantity and quality of the work experience). Offered on campus and via distance delivery. When offered via distance delivery, a local mentor (usually principal or teacher) must be willing to work with the student on the local level. (3+0)

ANL F208 **Advanced Athabascan Literacy** (h)
1-3 Credits Offered As Demand Warrants
Expository and creative writing for native speakers; reading Athabascan literature; elicitation, transcription and editing of cultural materials from elders. (1-3+0)

ANL F221 **Intermediate Conversational Alaska Native Language** (h)
1-3 Credits Offered As Demand Warrants
Continuation of ANL F121, ANL F122. Focus on conversational skills in a particular Alaska Native language. On completion of this course the student should not only be able to function at a low level of fluency but should also have the skills necessary to increase fluency through continued use of the language. ***Prerequisites: ANL F121; ANL F122; or permission of instructor.*** (1-3+0)

ANL F241 **Intermediate Athabascan-Koyukon or Gwich'in** (h)
3 Credits Offered Fall
Continuation of beginning Athabascan-Koyukon or Gwich'in. One of these two languages will be taught. Development of conversational ability, additional grammar and vocabulary. ***Prerequisites: ANL F141 and ANL F142 in the same language or permission of instructor.*** (3+0)

ANL F242 **Intermediate Athabascan-Koyukon or Gwich'in**
3 Credits Offered Spring
Continuation of beginning Athabaskan-Koyukon or Gwich'in. One of these two languages will be taught. Development of conversational ability, additional grammar and vocabulary. ***Prerequisites: ANL F141 and ANL F142 in the same language or permission of instructor.*** (3+0)

ANL F251 **Introduction to Athabascan Linguistics** (h)
3 Credits Offered Summer, As Demand Warrants
An introduction to the linguistic structure of the Athabascan family of languages, drawing on examples from the Athabascan languages of Alaska. Writing systems, word structure, texts, and language relationships. Techniques for accessing linguistic reference materials and the role of linguistic documentation in language revitalization and language learning. (3+0)

ANL F255 **Introduction to Alaska Native Languages: Eskimo-Aleut**
3 Credits Offered As Demand Warrants
Overview of languages native to Alaska with special attention to the Eskimo-Aleut languages. Focus on a specific language or language area (optional as most relevant to a regional student body). Includes history, present and future of basic language structure, oral, linguistic and educational literature. (3+0)

ANL F256 **Introduction to Alaska Native Languages: History, Status and Maintenance**
3 Credits Offered Spring Even-numbered Years
Overview of languages native to Alaska. Focus on a specific language or language area (optional as most relevant to a regional student body). History, current status and factors affecting the future maintenance of Alaska's languages. Topics include educational policies, lexical development (including corpus planning and standardization), language status (including language maintenance and revival issues). (3+0)

ANL F287 **Teaching Methods for Alaska Native Languages** (h)
3 Credits Offered As Demand Warrants
Methodological approaches and practice in teaching Native language and literacy to both speakers and non-speakers. ***Prerequisites: Knowledge of a Native language.*** (3+0)

ANL F288 **Curriculum and Materials Development for Alaska Native Languages** (h)
3 Credits Offered As Demand Warrants
Preparation and evaluation of curriculum and classroom materials for teaching Native languages. ***Prerequisites: ANL F287; Knowledge of a Native language; or permission of instructor.*** (3+0)

ANL F289 **Practicum in Native Language Education II**
3 or 4 Credits Offered As Demand Warrants
Individualized work experience. Supervised teaching with an experienced teacher overseeing student instructional activities and assisting with the class as needed. Note: Course may be repeated once for credit. Graded Pass/Fail. ***Prerequisites: ANL F199; ANL F287; ANL F288.*** (3 or 4+0+10)

ANL F315 **Alaska Native Languages: Eskimo-Aleut** (h)
3 Credits Offered As Demand Warrants
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. (3+0)

ANL F316 **Alaska Native Languages: Indian Languages** (h)
3 Credits Offered As Demand Warrants
A survey of all Native languages of Alaska; particularly of the Indian languages: Athabascan-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. (3+0)

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ANL F401 **Alaska Native Language Apprenticeship** (h)
5 Credits Offered As Demand Warrants
Structured study of an Alaska Native Language. Select and work intensively with a mentor (a native speaker of the language selected). Choice of mentor requires faculty approval. Meet regularly with mentor (minimum 10 hours per week) and participate in regular training sessions to work toward fluency. Graded Pass/Fail. ***Prerequisites: One year university-level study in language of internship or permission of instructor.*** (0.5+10+10)

ANL F402 **Alaska Native Language Apprenticeship** (h)
5 Credits Offered As Demand Warrants
Structured study of an Alaska Native language. Select and work intensively with a mentor (a native speaker of the language selected). Choice of mentor requires faculty approval. Meet regularly with mentor (minimum 10 hours per week) and participate in regular training sessions to work toward fluency. Graded Pass/Fail. ***Prerequisites: ANL F401.*** (0.5+10+10)

ANL F452 **Principles of Linguistic Analysis for Alaska Native Languages**
3 Credits Offered As Demand Warrants
Systematic principles of phonology, morphology, syntax and semantics for the Athabascan-Eyak-Tlingit, Haida, Tsimshian and Eskimo-Aleut language family. This language family is central to this course; the specific Alaska Native language emphasized will be dependent on student interest. Includes exposure to a variety of references and tools available for research in Alaska Native languages and linguistics. ***Prerequisites: LING F101 or ANL F251.*** (3+0)

ANL F601 **Seminar in Language Revitalization**
3 Credits Offered As Demand Warrants
Language teaching and acquisition strategies appropriate to under-documented and less commonly taught languages. Students write an applied research proposal related to local language endangerment issues and strategies for improving teaching either at the school or community level. Emphasis on students' class presentation and research ideas. ***Prerequisites: LING F450; ANTH F451 or LING F601.*** (3+0)

ANL F608 **Indigenous Knowledge Systems**
3 Credits Offered Fall
A comparative survey and analysis of the epistemological properties, world views and modes of transmission associated with various indigenous knowledge systems. Emphasis on knowledge systems practiced in Alaska. ***Prerequisites: Graduate standing or approval of instructor.*** Cross-listed with CCS F608; ED F608; RD F608. (3+0)

ANL F651 **Topics in Athabascan Linguistics**
3 Credits Offered Fall Even-numbered Years
Graduate-level introduction to important topics in Athabascan linguistics, including both foundational literature and current research. Topics may include laryngeal features; tonogenesis; the syntax-morphology interface; argument structure; lexical semantics; and discourse. Course may be repeated once for credit with permission of instructor. ***Prerequisites: LING F601 or equivalent; graduate standing. Recommended: LING F603; LING F604.*** Cross-listed with LING F651. (3+0)

ANL F690 **Seminar in Cross-Cultural Studies**
3 Credits Offered As Demand Warrants
Investigation of current issues in cross-cultural contexts. Opportunity for students to synthesize their prior graduate studies and research. Seminar is taken near the terminus of a graduate program. ***Prerequisites: Advancement to candidacy and permission of student's graduate committee.*** Cross-listed with CCS F690; ED F690; RD F690. (3+0)

ALASKA NATIVE POLITICS

AKNP F151 **Alaska Native Claims Settlement Act**
3 Credits Offered As Demand Warrants
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 nonprofit Native corporations. Future issues related to implementation of ANCSA. Also available via Independent Learning. (3+0)

AKNP F212 **Duties and Powers of Local Government**
1 Credit Offered As Demand Warrants
Development, operation and improvement of local government in Alaska. Future of local government in bush Alaska. For citizen, practitioner and advocate. (1+0)

AKNP F230 **Federal Indian Law**
3 Credits Offered As Demand Warrants
Principles of federal Indian law and the extent to which these principles apply to Alaska Natives. Foundation of principles that formed the basis of the relationship of the United States to the tribes, and development of this relationship. Legal perspective and land issues. ***Prerequisites: English placement test.*** (3+0)

AKNP F233 **Tribal Government Issues**
1 Credit Offered As Demand Warrants
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. (1+0)

ALASKA NATIVE STUDIES

ANS F100 **Preparing for College and Student Success**
1 Credit
Presentations on time and financial management, test-taking strategies, study techniques, UAF and community resources, GPA calculation, UAF catalog information, core requirements, goal-setting and personal choices. Provides students with the information and skills necessary for a successful UAF experience. Instruction by the staff of Rural Student Services. Native leaders will be invited as regular guest speakers. (1+0)

ANS F101 **Introduction to Alaska Native Studies** (h)
3 Credits Offered Fall
Introductory information on the Alaska Native community. Overview of significant Native issues. Review of pertinent literature and resources. (3+0)

ANS F102 **Orientation to Alaska Native Education**
2 Credits
A seminar in issues related to Alaska Native and rural education. Through weekly meetings held both on campus and in Fairbanks schools, students examine and discuss issues with Alaska Native educators on topics related specifically to rural and urban Alaska Native education. Issues include: Native ways of knowing, local control, curriculum development for small/multi-graded/rural schools, cultural differences in teaching and learning, and bilingual programs. Graded Pass/Fail. ***Prerequisites: Permission of instructor.*** Cross-listed with ED F102. (2+0)

ANS F111 **History of Alaska Natives** (s)
3 Credits Offered Fall
The history of Alaska Natives from contact to the signing of the Land Claims Settlement Act. Cross-listed with HIST F110. (3+0)

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ANS F150 **Topics in Alaska Regional Cultural History** (s)
3 Credits Offered As Demand Warrants
Cultural history of the peoples of a selected region of Alaska, which will vary depending on demand and instructor expertise. Methods including physical anthropology, ethnohistory, linguistics, archaeology, social anthropology, ethnography, ecology and climatology will be used. Includes the issues of culture-change due to Alaska Native and Euro-American contacts. ***Recommended: ANS F242.*** (3+0)

ANS F160 **Alaska Native Dance** (h)
1 Credit
Traditional Native Alaskan dancing, singing and drumming of songs from Alaska's major indigenous groups taught by guest Native elders and dancers. If there is sufficient interest, a dance group will be assembled using class members for spring presentations primarily in the Fairbanks area, including the Festival of Native Arts. Graded Pass/Fail. (0+2)

ANS F161 **Introduction to Alaska Native Performance** (h)
3 Credits Offered Fall
For Native and non-Native students with no prior acting or theatre experience. Includes both academic and practical components to examine traditional Alaska Native theatre mythology, ritual, ceremony and performance methods. Application of exercises and developmental scenes drawn from Alaska Native heritage. Cross-listed with THR F161. (3+0)

ANS F202X **Aesthetic Appreciation of Alaska Native Performance** (h)
3 Credits Offered Fall
Understanding and application of the cultural principles of Alaska Native oral narrative performances. Topics are arranged by the five broad Alaska Native regions and include lectures on culture, principles of visual arts analysis of oral narratives, musical expression and hands-on involvement in Alaska Native theatrical arts. ***Prerequisites: Placement in ENGL F111X or higher or permission of instructor.*** (3+0)

ANS F223 **Alaska Native Music** (h)
3 Credits Offered As Demand Warrants
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. Cross-listed with MUS F223. (3+0)

ANS F242 **Native Cultures of Alaska** (s)
3 Credits
The traditional Aleut, Eskimo and Indian (Athabascan 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. Pre-contact interaction between groups. Also available via Independent Learning. Cross-listed with ANTH F242. (3+0)

ANS F250 **Current Alaska Native Leadership Perspectives** (s)
3 Credits Offered As Demand Warrants
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. (3+0)

ANS F251 **Practicum in Native Cultural Expression**
1-3 Credits
Provides individual supervised activities in the formal organization, promotion and expression of Alaskan Native cultural heritage. May be repeated to a maximum of three credits. Graded Pass/Fail. ***Prerequisites: Permission of the department head.*** (1-3+0)

ANS F268 **Beginning Native Art Studio** (h)
3 Credits
Understanding and applying traditional designs and technologies of Native art. Special fees apply. ***Prerequisites: ART F105 or permission of instructor.*** Cross-listed with ART F268. (1+4)

ANS F275 **Yup'ik Practices in Spirituality and Philosophy** (h)
3 Credits Offered As Demand Warrants
Exploration of the processes in Yup'ik natural religion and the underlying philosophy that is the basis for Yup'ik existence in the spiritual realm. Wholeness of Yup'ik existence as it integrates into Western religion and philosophy. (3+0)

ANS F300 W **Alaska Native Writers Workshop** (h)
3 Credits Offered As Demand Warrants
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. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; and permission of instructor.*** (3+0)

ANS F310 **Indigenous Land Settlements** (s)
3 Credits Offered Spring
Native corporation goals and methods as they implement the Alaska Native Claims Settlement Act and establish themselves within the larger political economy. An examination of other indigenous land claims agreements in the circumpolar north and beyond. Also available via Independent Learning. ***Prerequisites: ANTH F242 or PS F263 or HIST F110; or permission of instructor.*** (3+0)

ANS F315 **Tribal People and Development** (s)
3 Credits Offered Spring Even-numbered Years
Impact of socioeconomic development processes on tribal peoples in less developed world societies. Implications of these processes for Alaska Native people. ***Prerequisites: Junior standing or permission of instructor.*** Cross-listed with RD F315. (3+0)

ANS F320 W **Language and Culture: Applications to Alaska** (s)
3 Credits Offered Spring
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: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; LING F101.*** Cross-listed with ANTH F320. (3+0)

ANS F325 **Native Self Government** (s)
3 Credits Offered As Demand Warrants
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 F110; PS F263; or permission of instructor.*** Cross-listed with PS F325. (3+0)

ANS F330 **Yup'ik Parenting and Child Development** (h)
1-3 Credits Offered As Demand Warrants
Processes, methods and evaluation of Yup'ik child rearing including how it is affected by other cultures and how these can be integrated into the process. Only offered at Kuskokwim Campus. ***Prerequisites: PSY F240 or permission of instructor.*** (1-3+0)

ANS F335 **Native North Americans** (s)
3 Credits Offered As Demand Warrants
Interdisciplinary examination of the ecological, cultural, historical and political experiences of Native Americans. Includes archaeological evidence, ethnographic data and indigenous accounts. Readings selected from all of North America with an emphasis on Alaska Natives. ***Prerequisites: ANS F101; ANS F242; or permission of instructor.*** (3+0)

ANS F340 **Contemporary Native American Literature** (h)
3 Credits Offered Fall
Contemporary Native American writing in English, including novels, short stories, poetry and plays. Examples of Native American film when related to a written work. Works discussed in relation to cultural contexts and interpretations. ***Prerequisites: ENGL F111X or permission of instructor.*** Cross-listed with ENGL F340. (3+0)

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ANS F347 **Voices of Native American Peoples** (h)
3 Credits Offered Spring Even-numbered Years
Exploration of the forms by which Native American peoples have narrated their life experiences. Includes oral narratives, written autobiographies, memoirs and speeches, and an introduction to the social, historical and cultural content surrounding these texts. Readings selected from all of North America with an emphasis on Alaska Natives. ***Prerequisites: ENGL F111X.*** Cross-listed with ENGL F347. (3+0)

ANS F348 W **Native North American Women** (s)
3 Credits Offered As Demand Warrants
Interdisciplinary examination of the relationship between Native American women and their social settings and cross-cultural experiences. Includes issues of political, economic and social solutions as employed by women in a large multi-ethnic nation-state. ***Prerequisites: ANS F101; ANTH F100X; ENGL F111X; ENGL F211X or ENGL F213X; SOC F100X; or permission of instructor.*** Cross-listed with WGS F348. (3+0)

ANS F349 **Narrative Art of Alaska Native Peoples (in English Translation)** (h)
3 Credits Offered Fall Even-numbered Years
Traditional and historical tales by Aleut, Eskimo, Athabascan, Eyak, Tlingit, Haida and Tsimshian storytellers. Bibliography, Alaska Native genres and viewpoints, and structural and thematic features of tales. ***Prerequisites: ENGL F111X or permission of instructor.*** Cross-listed with ENGL F349. (3+0)

ANS F350 W,O **Cross Cultural Communication: Alaskan Perspectives** (s)
3 Credits Offered Fall
Culture influences on communication patterns. Examines how misunderstandings may develop from differently organized ways of speaking and thinking when cultures come in contact. Focus on Alaska, with its diversity of cultures and languages, as a microcosm for examining these issues, particularly as they affect Native and non-Native communication in institutional settings. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** (3+0)

ANS F351 **Practicum in Native Cultural Expression**
1-3 Credits
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 F251. Graded Pass/Fail. ***Prerequisites: Permission of instructor.*** (1-3+0)

ANS F360 **Advanced Native Dance** (h)
1 Credit Offered Spring
Advanced dance techniques with emphasis on the cultural meanings of the performance. Graded Pass/Fail. ***Prerequisites: ANS F160 or permission of instructor.*** (1+0+1)

ANS F361 **Advanced Alaska Native Performance** (h)
3 Credits Offered As Demand Warrants
In-depth study of Alaska Native theatre techniques and tradition, including traditional dance, song and drumming techniques, mask characterizations and performance application and presentation of a workshop production developed by the students during the semester. ***Prerequisites: ANS/THR F161.*** Cross-listed with THR F361. (2+3)

ANS F365 **Native Art of Alaska** (h)
3 Credits Offered Fall
Art forms of the Eskimo, Indian and Aleut from prehistory to the present. Changes in forms through the centuries. ***Prerequisites: Advanced standing or permission of instructor.*** Cross-listed with ANTH F365; ART F365. (3+0)

ANS F366 **Northwest Coast Indian Art** (h)
3 Credits Offered As Demand Warrants
Arts of the Northwest Coast Indians and the place of art in their culture. Cross-listed with ANTH F366; ART F366. (3+0)

ANS F367 **Eskimo Art** (h)
3 Credits Offered Spring Even-numbered Years
Eskimo art from Alaska, Canada and Siberia beginning with the earliest known pieces to the beginning of the 20th century. Cross-listed with ANTH F367; ART F367. (3+0)

ANS F368 **Intermediate Native Art Studio** (h)
3 Credits
Understanding and applying advanced traditional designs and technologies of Native art. Special fees apply. ***Prerequisites: ART F268 or permission of instructor.*** Cross-listed with ART F368. (1+4)

ANS F370 **Issues in Alaska Bilingual and Multicultural Education**
1 Credit Offered As Demand Warrants
Current issues related to Alaska bilingual and multicultural education. Students must attend all three days of the annual Alaska Bilingual/Multicultural Education and Equity Conference and write a paper reflecting on how they will use information gained from the conference in their own multicultural education context. Course may be repeated for credit since the content of the conference changes each year. Graded Pass/Fail. ***Prerequisites: Prior course work at the lower-division level.*** Cross-listed with ED F370. (1+0)

ANS F375 **Native American Religion and Philosophy** (h)
3 Credits Offered Spring Even-numbered Years
Philosophical aspects of Native American world views. Systems of belief and knowledge, explanations of natural phenomena, relationship of humans to natural environment through ritual and ceremonial observances. ***Recommended: PHIL F102.*** (3+0)

ANS F381 W **Alaska Natives in Film** (h)
3 Credits Offered Spring Odd-numbered Years
Analysis of the portrayal of Alaska's Inupiaq and Yup'ik peoples (with some on Canada's Inuit) through select films and readings. Learning to critically analyze films and understanding how various film techniques are accomplished while focusing on feature films' treatment and use of Northern peoples in film, as well as looking at the social impact of such films. Also available via Independent Learning. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor. Recommended: ART/MUS/THR F200X.*** Cross-listed with FLM F381. (1.5+2-4)

ANS F401 **Cultural Knowledge of Native Elders** (h)
3 Credits Offered Fall
Study with prominent Native tradition-bearers in Native philosophies, values and oral traditions. Traditional knowledge elicited through the cultural heritage documentation process. Analysis of existing interactions between cultural traditions and contemporary American life as experienced by Native elders. ***Prerequisites: HIST F110; ANTH F242; upper-division standing.*** Cross-listed with RD F401. (3+0)

ANS F420 **Alaska Native Education** (s)
3 Credits Offered Fall
School systems historically serving Native people, current efforts toward local control and the cross-cultural nature of this education. Field experience required. ***Prerequisites: ANTH F242 or permission of instructor.*** Stacked with ED F606. Cross-listed with ED F420. (3+0)

ANS F425 **Federal Indian Law and Alaska Natives** (s)
3 Credits Offered Fall Even-numbered Years
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 F101; HIST F110; or permission of instructor. Recommended: PS F263.*** Cross-listed with PS F425. (3+0)

ANS F450 **Comparative Indigenous Rights and Policies** (s)
3 Credits Offered As Demand Warrants
A case-study approach in assessing aboriginal rights and policies in different nation-state systems. Seven aboriginal situations examined for factors

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promoting or limiting self-determination. ***Prerequisites: Upper-division standing or permission of instructor.*** Cross-listed with PS F450. (3+0)

ANS F461 **Native Ways of Knowing** (h)
3 Credits Offered Spring
Focus on how culture and worldview shape who we are and influence the way we come to know the world around us. Emphasis on Alaska Native knowledge systems and ways of knowing. ***Prerequisites: Upper-division standing.*** Cross-listed with ED F461. (3+0)

ANS F468 **Advanced Native Art Studio** (h)
3 Credits
Advanced traditional designs and technologies of Native art. Use of contemporary materials to interpret traditional forms. Special fees apply. ***Prerequisites: ART F368 or permission of instructor.*** Cross-listed with ART F468. (3+0)

ANS F472 W **Rural Alaska, Natives and the Press** (h)
3 Credits Offered As Demand Warrants
Analysis of the historical role rural Alaska and Alaska Natives have played in the statewide press, including Native and non-Native journalists/publishers and their impact on Alaska history and the public mind. Analysis of the rural press, portrayal of rural Alaska in the urban press and the role of cultural journalism. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** (3+0)

ANS F475 **Alaska Native Social Change** (s)
3 Credits Offered As Demand Warrants
Tradition and change in Native social institutions in contemporary society. Methods of identifying and analyzing significant Native social change processes for public understanding. ***Prerequisites: ANTH F242 or permission of instructor.*** (3+0)

AMERICAN SIGN LANGUAGE

ASLG F101 **American Sign Language I** (h)
3 Credits Offered As Demand Warrants
Visual-gestural language used by most deaf Americans. Acquisition of receptive and expressive conversational skills. Cultural aspects of everyday life experiences of deaf people. (3+0)

ASLG F110 **American Sign Language Practice** (h)
1 Credit Offered As Demand Warrants
Skill development in use of American Sign Language. Conducted entirely in sign language with aspects of deaf culture included. All skill levels. May be repeated twice for credit. Graded Pass/Fail. (1+0)

ASLG F202 **American Sign Language II** (h)
3 Credits Offered As Demand Warrants
Expressive and receptive conversational skills. Understanding the culture that is an integral part of the language. Continuation of American Sign Language I. ***Prerequisites: ASLG F101 or permission of instructor.*** (3+0)

ASLG F203 **American Sign Language III** (h)
3 Credits Offered As Demand Warrants
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 F101 and ASLG F202. ***Prerequisites: ASLG F202 or permission of instructor.*** (3+0)

ASLG F204 **American Sign Language IV** (h)
3 Credits Offered As Demand Warrants
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 F203. ***Prerequisites: ASLG F203 or permission of instructor.*** (3+0)

ASLG F205 **American Sign Language V** (h)
3 Credits Offered As Demand Warrants
Highly advanced analysis of American Sign Language, including classifiers, grammar and lexicon. Expanded receptive and expressive skill development based in extensive cultural knowledge of the Deaf community in America. ***Prerequisites: ASLG F204 or permission of instructor.*** (3+0)

ANTHROPOLOGY

ANTH F100X **Individual, Society and Culture** (s)
3 Credits
An examination of the complex social arrangements guiding individual behavior and common human concerns in contrasting cultural contexts. ***Prerequisites: Placement in ENGL F111X or higher or permission of instructor.*** (3+0)

ANTH F101 **Introduction to Anthropology** (s)
3 Credits Offered As Demand Warrants
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. (3+0)

ANTH F105 **Introduction to the History and Culture of the Seward Peninsula**
1 Credit Offered As Demand Warrants
Cultural history of the Seward Peninsula peoples for the last 10,000 years using physical anthropology, ethnography, ethnohistory, linguistics, archaeology, ecology and climatology. Eskimo and Euroamerican cultures which have existed in western Alaska. Cross-listed with HIST F105. (1+0)

ANTH F111 **Ancient Civilizations** (s)
3 Credits Offered Fall
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. (3+0)

ANTH F211 **Fundamentals of Archaeology** (s)
3 Credits Offered Fall
Methods and techniques of archaeological field and laboratory research. (2+3)

ANTH F214 **World Prehistory** (s)
3 Credits Offered Spring Even-numbered Years
Explores the archaeological evidence from the Old and New Worlds for the development of human culture, from the very beginning of humankind to the rise of ancient urban societies. ***Prerequisites: ANTH F100X or ANTH F111 or ANTH F211 or permission of instructor.*** (3+0)

ANTH F215 **Fundamentals of Social/Cultural Anthropology** (s)
3 Credits Offered Spring
Introduction to the basic concepts, subfields and techniques of social/cultural anthropology. Includes non-Western and Western ethnographic topics, and discussion of career options. Recommended: ANTH F211. (3+0)

ANTH F221 **Introduction to Biological Anthropology**
3 Credits Offered Fall
Survey of genetics, evolutionary mechanisms, adaptation, primate studies, the human fossil record and human variation. Provides a basic understanding of humans from a biological, evolutionary and temporal perspective. (3+0)

ANTH F230 **The Oral Tradition: Folklore and Oral History** (h)
3 Credits Offered As Demand Warrants
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. (3+0)

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ANTH F242 Native Cultures of Alaska (s)
3 Credits
The traditional Aleut, Eskimo and Indian (Athabascan 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. Pre-contact interaction between groups. Also available via Independent Learning. Cross-listed with ANS F242. (3+0)

ANTH F245 Culture and Global Issues (s)
3 Credits Offered As Demand Warrants
Introduces students to the anthropological study of globalization and global issues including the deterritorialization of culture, global social movements, culture and capital, immigration and culture, and modern and postmodern approaches to the study of culture and society. Begins with the history of global ethnography, but focuses primarily on contemporary issues. ***Prerequisites: ANTH F100X.*** (3+0)

ANTH F301 World Ethnography (s)
3 Credits Offered Spring Even-numbered Years
Survey of ethnographic research on peoples and cultures of selected geographic regions of the world, in both historical and contemporary perspective. Content of the course varies and is contingent on available faculty expertise. Course may be repeated once for credit when content varies. ***Prerequisites: ANTH F100X or permission of instructor.*** (3+0)

ANTH F302 Ethnography of Siberia (s)
3 Credits Offered As Demand Warrants
Survey of ethnographic research on peoples and cultures of Siberia, including the Russian Far East, in both historical and contemporary perspective. ***Prerequisites: ANTH F100X or permission of instructor.*** (3+0)

ANTH F308 W,O Language and Gender (s)
3 Credits Offered Fall Odd-numbered Years
Examination of relationships between language and gender, drawing on both ethnographic and linguistic sources. Topics include power, socialization and sexism. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** Cross-listed with LING F308; WGS F308. (3+0)

ANTH F309 Circumpolar Archaeology (s)
3 Credits Offered Fall Odd-numbered Years
Archaeology of the circumpolar world from initial occupations through the historic period. Cultural and chronological variability in human adaptation to high latitudes. Causes and consequences of population movement, environmental change and cultural interaction in the Old and New World, as understood through archaeology. ***Prerequisites: Permission of instructor.*** (3+0)

ANTH F313 Ethnography of Alaska (s)
3 Credits Offered Fall Odd-numbered Years
Survey of ethnographic research on peoples and cultures of Alaska, in both historical and contemporary perspective. Content of the course varies and may cover Aleuts and other peoples of the Alaskan Southwest; Inupiaq and Inuit peoples; peoples of the Alaskan Southeast; or Athabascan peoples. ***Prerequisites: ANTH F100X or permission of instructor.*** (3+0)

ANTH F315 Human Biology (n)
3 Credits Offered Spring Even-numbered Years
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 non-metrical variation, aging and sexing skeletal remains, and paleopathology. ***Prerequisites: ANTH F221 or BIOL F103X.*** (2+3)

ANTH F317 Human Growth and Development
3 Credits Offered As Demand Warrants
Life-span approach to physiological (and cognitive) growth and development in fossil through modern humans. Begins with a summary of human biology and genetics. Proceeds through major phases in life: prenatal, infancy, childhood, adolescence, adult and old age. Includes detailed soft and hard tissue developments in these phases of life. ***Prerequisites: ANTH F221.*** (3+0)

ANTH F320 W Language and Culture: Applications to Alaska (s)
3 Credits Offered Spring
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: ENGL F111X; ENGL F211X or ENGL F213X; LING F101; or permission of instructor.*** Cross-listed with ANS F320. (3+0)

ANTH F360 Indigenous Art and Culture (h)
3 Credits Offered As Demand Warrants
Overview of the aesthetic expressions of the cultures of Africa, Oceania and Native North America. Cultural and social factors will be studied through visual art from these areas. Cross-listed with ART F360. (3+0)

ANTH F365 Native Art of Alaska (h)
3 Credits Offered Fall
Art forms of the Eskimo, Indian and Aleut from prehistory to the present. Changes in forms through the centuries. ***Prerequisites: Advanced standing or permission of instructor.*** Cross-listed with ANS F365; ART F365. (3+0)

ANTH F366 Northwest Coast Indian Art (h)
3 Credits Offered As Demand Warrants
Arts of the Northwest Coast Indians and the place of art in their culture. Cross-listed with ANS F366; ART F366. (3+0)

ANTH F367 Eskimo Art (h)
3 Credits Offered Spring Even-numbered Years
Eskimo art from Alaska, Canada and Siberia beginning with the earliest known pieces to the beginning of the 20th century. Cross-listed with ANS F367; ART F367. (3+0)

ANTH F382 The People of Alaskan Southeast (s)
3 Credits
Tlingit, Haida and Tsimshian societies in the framework of Northwest Coast culture-area. Impact of Russian penetration and historical factors. ***Prerequisites: ANTH F242 or permission of instructor.*** (3+0)

ANTH F383 Athabascan Peoples of Alaska and Adjacent Canada (s)
3 Credits Offered Fall Even-numbered Years
Contemporary conditions and traditional heritage of the Athabascan populations of Alaska and Canada. Impact of Euroamericans on these populations and cultures. ***Prerequisites: ANTH F242 or permission of instructor.*** (3+0)

ANTH F384 History of Anthropology
3 Credits Offered Fall
Major theoretical approaches in 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. ***Prerequisites: ANTH F215 or permission of instructor.*** (3+0)

ANTH F402 Anthropology of Art (s)
3 Credits Offered As Demand Warrants
Anthropological study of art in cross-cultural perspective. Social context of art production and use and cross-cultural variations in definition of an artist's role. ***Prerequisites: Senior standing or permission of instructor.*** Cross-listed with ART F402. Stacked with ANTH F602. (3+0)

ANTH F403 W,O Political Anthropology (s)
3 Credits Offered Spring Odd-numbered Years
Political systems and the law. Case studies from nonindustrial societies, developing nations and parapolitical systems or encapsulated societies, such as Native peoples in the U.S. Political structures and institutions; social conflict,

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dispute settlement, social control and the law, political competition over critical resources; and ethnicity. ***Prerequisites: ANTH F215; COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** Stacked with ANTH F603. (3+0)

ANTH F405 W **Archaeological Method and Theory** (s)
3 Credits Offered Spring Even-numbered Years
Archaeological methods and analysis as the framework for different perspectives in archaeology. Application to specific research problems. ***Prerequisites: ANTH F211; ENGL F111X; ENGL F211X; or ENGL F213X.*** Stacked with ANTH F605. (3+0)

ANTH F407 **Kinship and Social Organization** (s)
3 Credits Offered Spring Even-numbered Years
Forms and function of family and household organization, kinship and marriage in diverse human sociocultural systems. Case studies from tribal and complex societies including contemporary United States. ***Prerequisites: ANTH F215 or permission of instructor.*** Stacked with ANTH F607. (3+0)

ANTH F409 **Anthropology of Religion** (s)
3 Credits Offered Fall Odd-numbered Years
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. ***Prerequisites: ANTH F100X; ANTH F215; or permission of instructor.*** Stacked with ANTH F609. (3+0)

ANTH F411 O **Senior Seminar in Anthropology** (s)
3 Credits Offered Spring
The integrated nature of anthropological inquiry. Includes a four-field approach to anthropology in a discussion-intensive setting. Student may focus on an interdisciplinary theme or a topic other than their own specialization. ***Prerequisites: COMM F131X or COMM F141X, Anthropology major with senior standing, or permission of instructor.*** (3+0)

ANTH F415 **Zooarchaeology and Taphonomy**
3 Credits Offered Fall Even-numbered Years
Identification of bones, how vertebrate bone remains may be used to study archaeological site formation processes, site organization, subsistence practices and animal procurement strategies. Preservation in modern depositional environments, paleoecology, vertebrate mortality profiles and demographic structure, site seasonality, bone breakage, taphonomy and faunal remains, and human land use practices. (2+3)

ANTH F422 **Human Osteology**
3 Credits
Human skeletal analysis: bone biology, skeletal anatomy, aging and sexing, metric and non-metric traits of skeleton and dentition, paleopathology and paleodemography. Inferences on genetic relationships between and patterned behavior within prehistoric groups derived from skeletal material. ***Prerequisites: ANTH F221 or permission of instructor.*** Stacked with ANTH F625. (0+0)

ANTH F423 **Paleoanthropology**
3 Credits Offered Spring Odd-numbered Years
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 F212 or ANTH F221 or permission of instructor.*** Stacked with ANTH F623. (2+3)

ANTH F424 **Analytical Techniques**
3 Credits Offered Fall Even-numbered Years
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. ***Prerequisites: ANTH F211 or ANTH F221; any college level mathematics course; or permission of instructor.*** Stacked with ANTH F624. (3+0)

ANTH F426 **Bioarchaeology**
3 Credits Offered Spring Even-numbered Years
Innovative methods for studying past interactions between biological and cultural factors, as revealed through human and faunal skeletal and plant remains. From these data sources, health, diet, social organization and interactions and life histories of past populations, as well as the environments in which they lived, are reconstructed and examined. ***Prerequisites: ANTH F211 or equivalent; ANTH F221.*** Stacked with ANTH F626. (3+0)

ANTH F428 **Ecological Anthropology and Regional Sustainability**
3 Credits Offered Spring Even-numbered Years
Biological, environmental and cultural factors and their interplay in defining the human condition, with examples from the Arctic and other populations. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; junior standing; or permission of instructor.*** (3+0)

ANTH F432 **Field Methods in Descriptive Linguistics** (h)
3 Credits Offered Spring Odd-numbered Years
Introduction to general issues in language field work and to issues specific to working with little studied and/or endangered languages in particular. Focus on introduction to writing systems, making recordings, computers and transcriptions, planning consultant sessions, working with consultants, interviewing and ethics in the field. Projects include making transcriptions of familiar language, and later, working on unfamiliar language with a language consultant, selecting and carrying out a well-defined project, resulting in a term paper. ***Prerequisites: LING F318; LING F320; or permission of instructor.*** Cross-listed with LING F431. Stacked with ANTH F632; LING F631. (3+0)

ANTH F434 **Field Methods in Descriptive Linguistics II**
3 Credits Offered Fall Odd-numbered Years
Second semester of Field Methods sequence. Plan a linguistic field project, including field trip, caring for equipment, data handling, community contacts, intellectual property and repatriation. Course work includes lectures and group elicitation with a speaker of a non-Indo-European language. Projects may involve either the traditional field work involving finding and working with a consultant, or work involving research in archival materials on languages no longer spoken. ***Prerequisites: LING F431 or ANTH F432.*** Cross-listed with LING F434. Stacked with LING F634; ANTH F634. (3+0)

ANTH F445 **Gender in Cross-Cultural Perspective** (s)
3 Credits Offered Spring Even-numbered Years
Gender as both cultural construction and social relationship is examined through readings in comparative ethnographies portraying gender roles in a broad variety of societies, from hunter-gatherer to industrial. New theoretical and methodological approaches in anthropology for exploring and understanding the experiences of women and men in their cultural variety are presented ***Prerequisites: ANTH F215 or WGS F201 or permission of instructor.*** Cross-listed with WGS F445. Stacked with ANTH F645. (3+0)

ANTH F446 **Economic Anthropology** (s)
3 Credits Offered Fall Even-numbered Years
Relationships between economic and other social relations. Pre-industrial 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. ***Prerequisites: A cultural anthropology class or permission of instructor.*** Stacked with ANTH F646. (3+0)

ANTH F451 **Quaternary Seminar**
3 Credits Offered As Demand Warrants
Discussion of the Quaternary Period (relatively recent past - spanning the past two million years) in order to gain a better understanding of the landscape, biota and climate of the present day. Quaternary studies are concerned with the historical dimension of the natural sciences. This seminar will range widely over diverse interdisciplinary subjects of Quaternary interest, such as paleoclimatology, paleobiogeography, vertebrate paleontology, and sedimentology. ***Prerequisites: GEOS F315; GEOS F304; GEOS F322.*** Cross-listed with GEOS F452. Stacked with ANTH F651; GEOS F651. (3+0)

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ANTH F460 **Cross-Cultural Filmmaking** (h)
3 Credits Offered Fall Odd-numbered Years
The use of film as a documentary tool for describing and understanding scientific and cultural phenomenon has led to the education of generations. Understanding the implications of our film work with a theoretical base for cultural understanding, scientific need and educational potentials will strengthen the film's integrity and production methods in creating video documents useful as a scientific/cultural record. Pre- production will include research of archival visual media, oral histories and print materials; analysis of educational and scientific funding and distribution options and preliminary interviews, location scouting and film treatment. Production will include time on location with small film crews, media logging and record keeping. Post-production will include basic editing of sequences for distribution. Cross-listed with FLM F460 and ART F460. ***Prerequisites: Junior, senior or graduate standing or permission of instructor.*** (3+0)

ANTH F465 **Geoarchaeology**
3 Credits Offered As Demand Warrants
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. Special fees apply. ***Prerequisites: GEOS F101X, an introductory course in archaeology, or permission of instructor.*** Cross-listed with GEOS F465. (3+0)

ANTH F470 **Oral Sources: Issues in Documentation** (h)
3 Credits Offered Fall
Preparation for recording and use of oral resources. Examines how meaning is conveyed through oral traditions and personal narratives and the issues involved with recording and reproducing narratives. Includes management of oral recordings, ethical and legal considerations, issues of interpretation and censorship, and the use of new technologies to access and deliver recordings. ***Prerequisites: At least one undergraduate ANTH course and one undergraduate HIST course, or permission of instructor.*** Cross-listed with NORS F470. Stacked with ANTH F670; NORS F670. (3+0)

ANTH F472 **Culture and History in the North Atlantic** (s)
3 Credits Offered Spring Odd-numbered Years
Ancient Norse culture and society. Includes readings of Old Norse poetry and Icelandic sagas in translation, with secondary analyses and archaeological background. Includes Greenlandic myths and contemporary ethnographic accounts of Iceland, Greenland and the Faroe Islands. ***Prerequisites: ANTH F100X. Recommended: ANTH F215.*** Stacked with ANTH F672; NORS F672. (3+0)

ANTH F602 **Anthropology of Art**
3 Credits Offered As Demand Warrants
Anthropological study of art in a 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.*** Stacked with ANTH F402; ART F402. (3+0)

ANTH F603 **Political Anthropology**
3 Credits Offered Spring Odd-numbered Years
Political systems and the law. Case studies from nonindustrial 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. ***Prerequisites: Graduate standing.*** Stacked with ANTH F403. (3+0)

ANTH F605 **Archaeological Method and Theory**
3 Credits Offered Spring Even-numbered Years
Archaeological methods and analysis as the framework for different perspectives in archaeology. Application to specific research problems. ***Prerequisites: ANTH F211 or permission of instructor.*** Stacked with ANTH F405. (3+0)

ANTH F606 **Folklore and Mythology: Anthropological Perspective**
3 Credits Offered As Demand Warrants
Intensive introduction to anthropological theory concerning oral traditions and the verbal arts. Attention is paid to classic historical approaches, but discussion of contemporary focus on context and performance is highlighted. Students will research topics of individual interest. ***Prerequisites: Upper-division undergraduate anthropology course or permission of instructor.*** (3+0)

ANTH F607 **Kinship and Social Organization**
3 Credits Offered Spring Even-numbered Years
Forms and function of family and household organization, kinship and marriage in diverse human sociocultural systems. Case studies from tribal and complex societies including contemporary United States. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with ANTH F407. (3+0)

ANTH F609 **Anthropology of Religion**
3 Credits Offered Fall Odd-numbered Years
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. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with ANTH F409. (3+0)

ANTH F610 **Northern Indigenous Peoples and Contemporary Issues**
3 Credits Offered Fall Odd-numbered Years
This course examines a number of issues affecting northern indigenous peoples from a comparative perspective, including perspectives from Alaska, Canada, Greenland and the Soviet Union. Issues include the impact of the alienation of land on which these peoples depend; the relationship between their small, rural microeconomies and the larger agroindustrial market economies of which they are a part; education, language loss and cultural transmission; alternative governmental policies towards indigenous peoples; and contrasting world views. ***Prerequisites: Graduate standing or upper-division standing with permission of instructor.*** Cross-listed with NORS F610. (3+0)

ANTH F612 **Paleoecology**
3 Credits Offered As Demand Warrants
Advanced study of Quaternary environments. The influences of climatic change and the interrelationships of physical and biological factors on the distribution and evolution of biota, including humans, will be discussed. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ANTH F616 **Anthropologic Background for Resilience and Adaptation**
1 Credit Offered fall
Provides the anthropological background that is necessary for understanding the role of anthropology in complex systems involving interactions among biological, economic, and social processes. Designed for incoming students of the Resilience and Adaptation Program (RAP), who have not received training in anthropology. ***Prerequisites: Graduate student enrollment or permission of instructor.*** (1+0)

ANTH F617 **Resilience Internship**
2 Credits Offered Fall
Students of the Resilience and Adaptation Program participate in internships to broaden their interdisciplinary training, develop new research tools and build expertise outside their home disciplines. Internships are for eight to ten weeks of full time commitment and take place during the student's first summer in the program. In autumn students meet to discuss their internship experiences and make public presentations. ***Prerequisites: ANTH/BIOL/ECON/NRM F667; ANTH/BIOL/ECON/NRM F668; or permission of instructor.*** Cross-listed with BIOL F613; ECON F613; NRM F613. (2+0)

ANTH F618 **Historical Archaeology**
3 Credits Offered As Demand Warrants
Historical archaeology of the Americas examines colonial and frontier archaeology as experienced by Euroamericans, in addition to contact and post contact

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archaeology of Native North Americans. Current perspectives in American historical archaeology, including a review of goals, problem orientation and the manner in which archaeological and documentary data are used for anthropological interpretation. ***Prerequisites: ANTH F405 or ANTH F605 or permission of instructor.*** (3+0)

ANTH F623 Paleoanthropology
3 Credits Offered Spring Odd-numbered Years
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: Graduate standing or permission of instructor.*** Stacked with ANTH F423. (2+3)

ANTH F624 Analytical Techniques
3 Credits Offered Fall Even-numbered Years
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. ***Prerequisites: Graduate standing in Anthropology.*** Stacked with ANTH F424. (3+0)

ANTH F625 Human Osteology
3 Credits Offered Fall Odd-numbered Years
Human skeletal analysis: bone biology, skeletal anatomy, aging and sexing, metric and non-metric traits of skeleton and dentition, paleopathology, and paleodemography. Inferences on genetic relationships between and patterned behavior within prehistoric groups derived from skeletal material. ***Prerequisites: ANTH F315; graduate standing; or permission of instructor.*** Stacked with ANTH F422. (3+0)

ANTH F626 Bioarchaeology
3 Credits Offered Spring Even-numbered Years
Innovative methods for studying past interactions between biological and cultural factors as revealed through human and faunal skeletal and plant remains. From these data sources, health, diet, social organization and interactions and life histories of past populations, as well as the environments in which they lived, are reconstructed and examined. ***Prerequisites: Graduate standing; or permission of instructor. Recommended: ANTH F415; ANTH F625.*** Stacked with ANTH F426. (3+0)

ANTH F629 Structures of Anthropological Argument
3 Credits Offered Fall
Reading and analysis of examples from various paradigms in anthropology, past and present. Presents a thorough grounding in forms of anthropological argument and preparation for the research and writing process. Includes evolutionary, Boasian, structural-functional, structural as well as subdisciplinary linguistic, archaeological and biological forms of argument. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ANTH F630 Anthropological Field Methods
3 Credits Offered Spring Odd-numbered Years
Concentration on the practical concerns and aspects of conducting anthropological field research. Includes the relevant literature and significant discussions on the different aspects of fieldwork. In addition, students will gain practical experience in the problems, techniques and methods of fieldwork involving people from similar or distinct cultural backgrounds. The preparation of research proposals is also given attention. ***Prerequisites: Graduate standing in Anthropology or permission of instructor.*** (3+0)

ANTH F631 Language and Culture Seminar
3 Credits Offered Spring Even-numbered Years
In-depth examination of the interrelation between language and culture in the context of the theories of human communication, semiotics and maintenance of cultural boundaries. In particular, the influence of the Sapir-Whorf hypothesis in anthropological thinking today and the field of ethnoscience will be examined, as well as language change in contact situations with emphasis on emergence of pidgin and Creole languages and effects of the introduction of writing. ***Prerequisites: Graduate standing; previous credit in anthropological or descriptive linguistics; or permission of instructor.*** (3+0)

ANTH F632 Field Methods in Descriptive Linguistics
3 Credits Offered Spring Odd-numbered Years
Introduction to general issues in language field work and to issues specific to working with little studied and/or endangered languages in particular. Focus on introduction to writing systems, making recordings, computers and transcriptions, planning consultant sessions, working with consultants, interviewing, and ethics in the field. Projects include making transcriptions of familiar language, and later, working on unfamiliar language with a language consultant, selecting and carrying out a well-defined project, resulting in a term paper. ***Prerequisites: LING F318; LING F320; or permission of instructor.*** Cross-listed with LING F631. Stacked with ANTH F432; LING F431. (3+0)

ANTH F634 Field Methods in Descriptive Linguistics II
3 Credits Offered Fall Odd-numbered Years
Second semester of Field Methods sequence. Plan linguistic field project, including field trip, caring for equipment, data handling, community contacts, intellectual property and repatriation. Course work includes lectures and group elicitation with a speaker of non-Indo-European language. Projects may involve either the traditional field work involving finding and working with a consultant, or work involving research of archival materials on languages no longer spoken. ***Prerequisites: ANTH F632 or LING F631.*** Cross-listed with LING F634. Stacked with ANTH F434; LING F434. (3+0)

ANTH F637 Methods in Ethnohistorical Research
3 Credits Offered Spring Even-numbered Years
Students of anthropology are introduced to the methods of historical research, particularly the critical evaluation of written documents, problems of archaic language and paleography, and methods for assessing art and folklorist tradition as sources of history. Oral history and the data of language and archaeology are considered. ***Prerequisites: Graduate standing in anthropology or permission of instructor.*** (3+0)

ANTH F645 Gender in Cross-Cultural Perspective
3 Credits Offered Spring Even-numbered Years
Gender as both cultural construction and social ethnographies relationship is examined through readings in comparative ethnographies portraying gender roles in a broad variety of societies, from hunter-gatherer to industrial. New theoretical and methodological approaches in anthropology for exploring and understanding women's and men's experiences in their cultural variety are presented. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with ANTH F445; WGS F445. (3+0)

ANTH F646 Economic Anthropology
3 Credits Offered Fall Even-numbered Years
Relationships between economic and other social relations. Pre-industrial 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. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with ANTH F446. (3+0)

ANTH F647 Global to Local Sustainability
3 Credits Offered Fall
Explores the basic principles that govern resilience and change of ecological and social systems. Principles are applied across a range of scales from local communities to the globe. Working within and across each of these scales, students address the processes that influence ecological, cultural and economic sustainability, with an emphasis on northern examples. ***Prerequisites: Graduate standing and permission of instructor.*** Cross-listed with BIOL F647; ECON F647; NRM F647. (3+0)

ANTH F649 Integrated Assessment and Adaptive Management
3 Credits Offered Spring
An interdisciplinary exploration of the theoretical and practical considerations of integrated assessment and adaptive management. Students survey concepts important in understanding societal and professional-level decision-making. Students work as individuals and as a team to undertake case studies with relevance to integrated assessment and adaptive management. Collectively, the

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class builds a portfolio of cases and conducts an integrated assessment. Note: In case of enrollment limit, priority will be given to graduate students in the Resilience and Adaptation Program in order for them to be able to meet their core requirements. ***Prerequisites: Graduate student standing in a natural science, social science, or interdisciplinary program at UAF or another university or permission of instructor. The course is designed to fit into the sequence of Resilience and Adaptation Program's core courses. It is open to other graduate students interested in and prepared to conduct interdisciplinary studies relating to sustainability. Recommended: ANTH/BIOL/ECON/NRM F647; ANTH/BIOL/ECON/NRM F648; ANTH/BIOL/ECON/NRM F667.*** Cross-listed with BIOL F649; ECON F649; NRM F649. (3+0)

ANTH F652 **Research Design and Professional Development Seminar**
3 Credits Offered Spring
How to develop problem-based research in anthropology and prepare research proposals, grant proposals and publications along with critical evaluations of similar material. Topics include preparation of oral presentations for professional meetings, lectures and seminars; curriculum vitae preparation; and project budgeting. ***Prerequisites: Upper-division anthropology course or permission of instructor.*** (3+0)

ANTH F653 **Current Perspectives in Cultural Resource Management**
3 Credits Offered Fall Odd-numbered Years
Cultural resource management. Includes historic preservation and environmental law. Reviews pertinent legislation pertaining to the protection of historic properties and presents a series of real world problems confronted by archaeologists. Cultural resource management will be treated historically within a context of the development of American archaeology. Emphasis on practical aspects of career development. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ANTH F667 **Resilience Seminar I**
1 Credit Offered Fall
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research that are relevant to sustainability. A considerable portion of the seminar is student-directed, with students assuming leadership in planning seminar activities with the instructor. Graded Pass/Fail. ***Prerequisites: Enrolled in Resilience and Adaptation Graduate Program or permission of instructor. Recommended: ANTH/BIOL/ECON/NRM F647.*** Cross-listed with BIOL F667; ECON F667; NRM F667. (2+0)

ANTH F668 **Resilience Seminar II**
1 Credit Offered Spring
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research relevant to sustainability. The seminar provides support to each student planning his/her summer internship and preparing and presenting a thesis research prospectus. Graded Pass/Fail. ***Prerequisites: ANTH/BIOL/ECON/NRM F647; ANTH/BIOL/ECON/NRM F667; or permission of instructor.*** Cross-listed with BIOL F668; ECON F668; NRM F668. (2+0)

ANTH F670 **Oral Sources: Issues in Documentation**
3 Credits Offered Fall
Preparation for recording and use of oral resources. Examines how meaning is conveyed through oral traditions and personal narratives and the issues involved with recording and reproducing narratives. Includes management of oral recordings, ethical and legal considerations, issues of interpretation and censorship and the use of new technologies to access and deliver recordings. ***Prerequisites: At least one undergraduate ANTH course and one undergraduate HIST course, or permission of instructor.*** Cross-listed with NORS F670. Stacked with ANTH F470; NORS F470. (3+0)

ANTH F672 **Culture and History in the North Atlantic**
3 Credits Offered Spring Odd-numbered Years
Study of ancient Norse culture and society. Includes readings of Old Norse poetry and Icelandic sagas in translation, with secondary analyses and archaeological background. Includes Greenlandic myths and contemporary ethnographic accounts of Iceland, Greenland and the Faroe Islands. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with NORS F672. Stacked with ANTH F472. (3+0)

ANTH F675 **Political Ecology of the Oceans**
3 Credits Offered Alternate Spring
Introduction to the field of political ecology in the marine sphere. Topics include the sociology of scientific knowledge, traditional and local ecological knowledge, politics of resource management, processes of marine enclosure, environmental values, marine conservation, environmental justice, and colonialism and economic development. ***Prerequisites: Graduate standing; or permission of instructor.*** Cross-listed with FISH F675. (3+0)

ANTH F680 **Marine Sustainability Internship**
2 Credits Offered Fall
Internship program in marine ecosystem sustainability to broaden students' interdisciplinary training, develop new research tools, build expertise outside their home discipline, gain exposure to careers, and gain a unique perspective on research problems. Internships are for a minimum of 8 weeks and take place during the summer. In the autumn students report on and meet to discuss their internship experiences. ***Prerequisites: MSL F652 or permission of instructor.*** Cross-listed with MSL F680, FISH F680 and NRM F680. (0+0+5-16)

APPLIED ART

APAR F100 **Basic Video Workshop**
1 Credit Offered As Demand Warrants
Basic video equipment operation and elementary equipment maintenance. Camera techniques, portable video recorders, lighting, audio and simple video production. (1+0)

APAR F103 **Editing Videotape**
1 Credit Offered As Demand Warrants
Principles and operations in electronic editing of videotape. Persons completing this course may use Media Center videotape editing facilities. (1+1)

APAR F105 **Community TV Production**
1 Credit Offered As Demand Warrants
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. (1+1)

APAR F107 **Beading**
1 Credit Offered As Demand Warrants
Application of beads to various materials, three kinds of stitches and use of a bead loom. (1+1)

APAR F140 **Clothing Construction**
1 Credit Offered As Demand Warrants
Techniques of clothing construction for the home sewer. Development of sewing skills necessary to create garments for the beginner as well as the more experienced sewer. (1+0)

APAR F150 **Introduction to Traditional Crafts**
1-3 Credits Offered As Demand Warrants
Introduction to traditional crafts such as basket weaving, birch bark basketmaking, beading, carving, canoe or kayak making, etc. Topics vary based on community need and interest and will be identified each semester. Course may be repeated for credit with each new topic. (1-3+0)

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APAR F157 **Skin Sewing**
1-2 Credits Offered As Demand Warrants
Fundamentals of skin sewing. Projects (e.g. slippers, mukluks, mittens, fur hats, vests and ruffs) dependent upon student ability and experience. (1-2+0)

APAR F250 **Intermediate Traditional Crafts**
1-3 Credits Offered As Demand Warrants
Continued development of traditional crafts such as basket weaving, birch bark basket-making, beading, carving, canoe or kayak making, etc. Topics vary based on community need and interest and will be identified each semester. Course may be repeated for credit with each new topic. ***Prerequisites: APAR F150 or permission of instructor.*** (1-3+0)

APPLIED BUSINESS

ABUS F051 **Bookkeeping For Business**
3 Credits Offered As Demand Warrants
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.) Special fees apply. (3+0)

ABUS F070 **Job Readiness Skills**
1 Credit
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. Also offered pass/fail as ABUS F070P. Special fees apply. (1+0)

ABUS F101 **Principles of Accounting I**
3 Credits
Accounting concepts and procedures for service businesses and for merchandising businesses owned by a single proprietor. A preparer's approach emphasizes the use of debits and credits to account for the details of business transactions. Also available via Independent Learning. (3+0)

ABUS F102A **Keyboarding: Touch Typing**
1-3 Credits
Instruction in the mastery of alphabetic keyboard touch typing, skill building and document formatting. Skills mastered can be applied to typewriters, CRTs, computer terminals, or other equipment with a keyboard. May be repeated twice for credit. Graded Pass/Fail. (1-3+0)

ABUS F102B **Keyboarding: Skill Building**
1-3 Credits
Instruction in the mastery of alphabetic keyboard touch typing, skill building and document formatting. Skills mastered can be applied to typewriters, CRTs, computer terminals, or other equipment with a keyboard. May be repeated twice for credit. Graded Pass/Fail. (1-3+0)

ABUS F102C **Keyboarding: Document Formatting**
1-3 Credits
Instruction in the mastery of alphabetic keyboard touch typing, skill building and document formatting. Skills mastered can be applied to typewriters, CRTs, computer terminals, or other equipment with a keyboard. May be repeated twice for credit. Graded Pass/Fail. (1-3+0)

ABUS F108 **Keyboarding II/Intermediate Typewriting**
3 Credits Offered As Demand Warrants
Instruction and training to attain at least minimal typing skill, experience and knowledge necessary for a typist beginning an office career. Lab arranged. ***Prerequisites: CIOS F106 or one year high school typing or permission of instructor.*** (3+0)

ABUS F116 **Using 10-Key Calculators**
1 Credit Offered As Demand Warrants
Using the efficient 10-key touch method to solve business problems on a calculator. Emphasis is placed on developing occupational proficiency in the use of calculating machines for initial job placement. (1+0)

ABUS F130 **Real Estate**
3 Credits Offered As Demand Warrants
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. (3+0)

ABUS F134 **Alphabetic Filing**
1 Credit
Mastery and use of ARMA filing rules as they apply to alphabetic, subject, numeric and geographic filing. (0+3)

ABUS F135 **Record Keeping for Business**
3 Credits Offered As Demand Warrants
Skills in keeping business records and banking procedures as a cashier, sales clerk, purchasing agent or payroll clerk. (3+0)

ABUS F141 **Payroll Accounting**
1-3 Credits Offered Fall
Payroll records and laws. Methods to compile and calculate payroll information, earnings, deductions and net wages. City, state and federal tax report forms. For payroll personnel. (1-3+0)

ABUS F143 **Office Accounting II**
2 Credits Offered As Demand Warrants
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. (2+0)

ABUS F151 **Village Based Entrepreneurship**
1-3 Credits Offered As Demand Warrants
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. May be offered in three, 1 credit modules (a, b and c). (1-3+0)

ABUS F154 **Human Relations**
3 Credits
Attitudes, self-concepts, personal communication styles, motivation, interactions, positive reinforcements, team building and leadership development. (3+0)

ABUS F155 **Business Math**
1-3 Credits
Review of basic math computation skills applied to various business areas. Emphasis on applications. (1-3+0)

ABUS F158 **Introduction to Tourism**
1-3 Credits Offered As Demand Warrants
Forces which influence international and domestic hospitality, leisure, travel and recreation industries. Socioeconomic models and measure of regional impact, demand and supply. (1-3+0)

ABUS F160 **Principles of Banking**
3 Credits Offered As Demand Warrants
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. (3+0)

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ABUS F161 Personal and Business Finance
3 Credits
Explores the management of personal and family finances, including financial planning, budgeting, time value of money, consumer buying, personal credit, savings and investment, home ownership and mortgages, insurance, estate planning, retirement, consumer fraud, and laws. (3+0)

ABUS F170 Business English
3 Credits Offered As Demand Warrants
Comprehensive review of grammar, punctuation, capitalization and spelling, with emphasis on business and office occupations. ***Recommended: DEVE F070; DEVS F104; placement into ENGL F111X; or departmental/instructor permission.*** (3+0)

ABUS F175 Customer Service
3 Credits Offered Fall
Presents customer service as integral to business success. Preparation for effective interaction with customers. Includes trends, interpretation of trends and development of fundamental skills necessary to achieve excellence. ***Recommended: BA F151; ABUS F154.*** (3+0)

ABUS F178 Professionalism
3 Credits Offered As Demand Warrants.
Presents professionalism and personal effectiveness as integral to success in business, professional and entrepreneurial environments. Emphasizes conscious competency and ongoing self-development not only as a speaker and presenter but also as a leaer in the workplace and community. (3+0)

ABUS F179 Fundamentals of Supervision
3 Credits Offered Spring
Effective supervisory concepts including planning, organizing and staffing functions. Communicating and delegating effectively, morale, productivity, decision making, positive position discipline and performance goals development. (3+0)

ABUS F182 Office Procedures
3 Credits Offered As Demand Warrants
Duties and responsibilities of general office employees including filing, processing mail, telephone communication, meeting the public, office supplies, banking, employment procedures and grooming. (3+0)

ABUS F183 Advanced Job Readiness Skills
1-3 Credits Offered As Demand Warrants
Practical information necessary to help students choose meaningful employment as well as build their own employment portfolio. Materials used will allow students to learn more about themselves, engage in personal assessment and learn how this information relates to different careers. Students will complete target resumes, cover letters, follow-up letters, applications, job search strategies, mock job interviews and a professional portfolio. ***Recommended: Job readiness. This class is designed for students embarking into the job market.*** (1-3+0)

ABUS F188 Personal Income Tax
1 Credit Offered Fall
Taxable income, deductions, credit, exemptions, and computation. Computer use, record keeping methods, tax forms and new tax laws. (1+0)

ABUS F199 Practicum in Applied Business
1-3 Credits
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. ***Prerequisites: Permission of instructor.*** (0+0)

ABUS F201 Principles of Accounting II
3 Credits
Introduction to accounting concepts and procedures for a business. Emphasis is on the accounting cycle and the recording, summarizing and interpretation of accounting data. ***Recommended: Math placement at F100-level or above.*** (3+0)

ABUS F202 Principles of Accounting III
3 Credits Offered Spring
Continuation of elementary accounting concepts and procedures with the introduction of cost accounting principles for manufacturing and service operations. Job order costing, process costing, cost-volume profit, budgeting and variances are introduced. ***Prerequisites: ABUS F201 or permission of instructor. Recommended: Math placement at F100-level or above.*** (3+0)

ABUS F203 Accounting Capstone
3 Credits Offered Fall
Accounting procedures in retail, service and trade businesses. The complete accounting cycle, including record keeping, posting and preparation of financial statements, bank reconciliation, payroll computations and closing books. Accounts receivable, accounts payable, purchasing, credit and other accounting requirements. Recommended: ABUS F101; ABUS F141; concurrent enrollment or completion of ABUS F201; ABUS F220. (3+0)

ABUS F207 Machine Transcription
2 Credits Offered As Demand Warrants
Training in machine transcription with emphasis on mailable copies. Review of language skills and vocabulary included. ***Prerequisites: CIOS F108 or permission of instructor.*** (2+0)

ABUS F208 Medical Machine Transcription
2 Credits Offered As Demand Warrants
Instruction and practice in formatting medical papers including Medicare and admission forms, 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. ***Prerequisites: ABUS F108; ABUS F207.*** (2+0)

ABUS F209 Legal Machine Transcription
2 Credits Offered As Demand Warrants
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. (2+0)

ABUS F210 Income Tax
3 Credits
Income tax fundamentals. Includes how to complete basic income tax forms/schedules for individuals and small business owners. Covers taxable income, deductions, credits, exemptions, computation, record keeping methods, new tax laws and strategies to reduce taxes. (3+0)

ABUS F220 Microcomputer Accounting: QuickBooks
3 Credits
Basic microcomputer principles. Includes entering transactions, analyzing results, correcting errors and organizing business finances. QuickBooks is a widely used accounting software application. Also available via Independent Learning. ***Prerequisites: ABUS F101 or permission of instructor.*** (3+0)

ABUS F221 Microcomputer Accounting
3 Credits
Computer processing of accounting transactions. Software packages, microcomputer systems and hardware, computer terminology, system analysis and actual computer operations in accounting. ***Prerequisites: ACCT F261; ABUS F142.*** (3+0)

ABUS F223 Real Estate Law
3 Credits Offered As Demand Warrants
Deeds and conveyances, mortgages, liens, rentals, appraisals and other transactions in real estate and law. Also available via Independent Learning. (3+0)

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ABUS F230 **Applied Intermediate Accounting**
3 Credits Offered Spring
Review of accounting principles with emphasis on working capital, plant assets, intangible assets and financial statement presentation. Current accounting pronouncements. (3+0)

ABUS F231 **Introduction to Personnel**
1-3 Credits Offered As Demand Warrants
Company organizational structure, job analysis, staffing and organization, employee growth and development, employee supervision and developing leadership skills. May be offered in three one credit modules. (1-3+0)

ABUS F232 **Contemporary Management Issues**
3 Credits Offered Fall
Management functions, including planning, organizing, staffing, directing and controlling, human aspects of management, and decision making. ***Prerequisites: BA F151 or permission of instructor.*** (3+0)

ABUS F233 **Financial Management**
3 Credits Offered Spring
Internal financial controls, fraud, and internal audit. ***Recommended: Completion of BA F151; ABUS F101 or ACCT F261.*** (3+0)

ABUS F234 **Introduction to Investing**
3 Credits Offered Fall
An in-depth study of investment for personal use. The overall investment environment is described and conceptual tools needed by investors are presented. Popular investment vehicles such as common stocks, bonds, preferred stocks, convertible securities, and mutual funds are addressed. ***Recommended: ABUS F161.*** (3+0)

ABUS F235 **Fund Accounting for Non-Profits**
3 Credits Offered Fall
Accounting for nonprofit organizations, governmental units, health care providers, voluntary health and welfare organizations, public schools, colleges, universities and other organizations using fund accounting. ***Prerequisites: ABUS F101.*** (3+0)

ABUS F241 **Applied Business Law I**
3 Credits Offered Fall
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. ***Prerequisites: BA F151.*** (3+0)

ABUS F242 **Employment Law**
3 Credits Offered As Demand Warrants
Labor and employment law with emphasis on case analysis. ***Recommended: BA F151.*** (3+0)

ABUS F255 **Marketing in Tourism**
3 Credits Offered As Demand Warrants
Basic principles of marketing for the tourism industry. Emphasis on Alaska as the tourist destination. (3+0)

ABUS F256 **Small Hotel, Bed and Breakfast, and Lodge Operations**
1-3 Credits Offered As Demand Warrants
Introduction to hospitality industry focusing on the development and operation of small hotels, bed and breakfast accommodations, and lodge operations. May be offered in three 1 credit modules. (1-3+0)

ABUS F260 **Marketing Practices**
3 Credits
Designed to give students a real-world view of basic marketing principles and practices. Emphasizes planning strategy and application of marketing concepts in analysis of case studies. Examines nature of marketing and its environment, selecting target markets and developing a market mix: product, price, promotion and distribution. (3+0)

ABUS F263 **Public Relations**
3 Credits Offered Spring
Public relations is image making, repairing and promoting. PR involves promotion, selling, advertising and creating public, corporate, government, church and other institutional images. Public relations professionals need skills in psychology, writing, mass media theory, image construction, persuasion and audience analysis. Introduces public relations and the role it plays in our world and society. ***Recommended: BA F151.*** (3+0)

ABUS F264 **Filing/Records Management**
3 Credits Offered As Demand Warrants
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. (3+0)

ABUS F265 **Seminar in Applied Marketing**
3 Credits Offered Spring
Analysis of the managerial relevance of current issues in marketing as found in the professional and/or popular marketing literature. A historical perspective will be provided through classic readings from the literature. Students will be expected to read, analyze and discuss assigned readings in a seminar atmosphere with a view toward understanding the rationale of applied marketing management practices such as theory, marketing mix and ethics. The relation and role of marketing, relative to other functional areas of the firm, will be explored. ***Prerequisites: ABUS F260 or permission of instructor.*** (3+0)

ABUS F267 **Transportation and Logistics Management**
1-3 Credits Offered As Demand Warrants
Understanding of issues and challenges concerning structure and management of air, sea, rail and highway transportation systems. Emphasis on effective management of the transporting of people and goods intra-Alaska and to destinations that are served from Alaska. ***Prerequisites: ABUS F158 or permission of instructor.*** (1-3+0)

ABUS F269 **Food and Beverage Management**
1-3 Credits Offered As Demand Warrants
Development of a successful food and beverage system from its inception to operation. Menu planning, purchasing, preparation, service and food/beverage cost control. ***Prerequisites: ABUS F158 or permission of instructor.*** (1-3+0)

ABUS F271 **Business Communications**
3 Credits Offered As Demand Warrants
Composition and evaluation of various kinds of common communications between a business person and associates, customers and dealers. Included are interoffice memos, letters, reports and oral communications. ***Prerequisites: ABUS F170 or permission of instructor.*** (3+0)

ABUS F272 **Small Business Planning**
3 Credits Offered Spring
Elements of small business planning processes including the components of a written business plan. (3+0)

ABUS F273 **Managing A Small Business**
3 Credits Offered Spring
Entrepreneurship and management, starting a new business, buying an existing business or franchise. Managing, marketing, staffing, financing, budgeting, pricing, operational analysis and controls. (3+0)

ABUS F274 **E-commerce**
1-3 Credits Offered Fall
Exploration of trends in Internet commerce. Analysis of the elements needed to build and manage a successful e-commerce business. Website planning and creation include information design, navigation design and site presentation. ***Recommended: ABUS F273, BA F151 and CIOS F150.*** (1-3+0)

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ABUS F275 **Applied International Business**
3 Credits Offered Spring
Case study and research-oriented approach to cultural, economic, political, social, logistical and other business issues in the ever-changing international business environment. ***Recommended: ABUS F273 and BA F151.*** (3+0)

ABUS F288 **Professional Certification Preparation**
1-3 Credits Offered As Demand Warrants
Prepares students for national or industry specific certification examination. Course may be taken three times for a maximum of 4 credits. Graded Pass/Fail. ***Recommended: Experience or course work in exam area. Course is intended as preparation for certification exam.*** (1-3+0)

ABUS F299 **Practicum in Applied Business**
1-9 Credits
Supervised training and work experience (local or foreign study abroad). 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. ***Prerequisites: Permission of instructor.*** (0+0)

APPLIED PHOTOGRAPHY

APHO F073 **Process and Print Color Slides**
1 Credit Offered As Demand Warrants
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. (1+0)

APHO F074 **Process/Print Color Negatives**
1 Credit Offered As Demand Warrants
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. (1+0)

ARABIC

ARAB F100A **Elementary Arabic 1A** (h)
3 Credits Offered as Demand Warrants
Designed for beginning students of the Arabic language and culture, with emphasis on the fundamentals of the spoken language, vocabulary and grammatical structure. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements. (3+0)

ARAB F100B **Elementary Arabic 1B** (h)
3 Credits Offered as Demand Warrants
Continuation of ARAB F100A. Increasing emphasis on the fundamentals of the spoken language, vocabulary and grammatical structure, and expanded information on culture. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements. ***Prerequisites: ARAB F100A or permission of instructor.*** (3+0)

ARCTIC SKILLS

A per semester fee for equipment upgrade will be assessed for one or more ARSK, EMS and FIRE courses.

ARSK F147A **Arctic Survival**
1-2 Credits Offered As Demand Warrants
Designed for those individuals traveling for work or recreation in the Arctic. The focus is on preparation and development of knowledge and skills to cope effectively with the difficulties and dangers to which travelers are frequently exposed. Topics include appropriate survival kits, clothing options, nutrition and hydration needs, shelter construction, signal development, cold weather injuries and safety issues related to modes of transportation. The two credit option includes two field practicums. May be repeated for a maximum of 4 credits. Graded Pass/Fail. ***Recommended: College level reading skills.*** (1-2+0)

ARSK F147B **Arctic Survival**
1-2 Credits Offered As Demand Warrants
Designed for those individuals traveling for work or recreation in the Arctic. The focus is on preparation and development of knowledge and skills to cope effectively with the difficulties and dangers to which travelers are frequently exposed. Topics include appropriate survival kits, clothing options, nutrition and hydration needs, shelter construction, signal development, cold weather injuries and safety issues related to modes of transportation. The two credit option includes two field practicums. May be repeated for a maximum of 4 credits. Graded Pass/Fail. ***Recommended: College level reading skills.*** (1-2+0)

ARSK F170 **EMT: Emergency Medical Technician I**
6 Credits
How to provide basic life support such as splinting, hemorrhage control, oxygen therapy, suction, CPR and use of automated external defibrillators (AEDs). EMT I is the foundation of all emergency medical training. Mastering of EMT I level knowledge and techniques must occur before moving on to advanced levels. Special fees apply. Cross-listed with EMS F170. (4+4)

ART

ART F100 **Art Exploration**
3 Credits Offered As Demand Warrants
Exposure to design, printmaking, weaving and sculpture. Individual studio projects, lectures, and field trips introduce areas for further study. (3+0)

ART F101 **Introduction to Ceramics**
3 Credits Offered As Demand Warrants
Making and firing clay objects. Study of clay methods, forming decorations, glazing and firing. For beginning students only. (3+0)

ART F104 **Introduction to Drawing**
1-3 Credits Offered As Demand Warrants
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. (1-3+0)

ART F105 **Beginning Drawing** (h)
3 Credits
Basic elements in drawing. Emphasis on a variety of techniques and media. Special fees apply. (1+4)

ART F113 **Introduction to Painting**
1-3 Credits Offered As Demand Warrants
Investigation of basic materials, various media and techniques available for painting. (1-3+2)

ART F122 **Introduction to Stained Glass** (h)
1-3 Credits Offered As Demand Warrants
Fundamental skills to construct stained glass pieces. Basics of glass cutting, leading and soldering. Each student completes a one square-foot window, a large group project and a sun catcher. (2+4)

ART F125 **Aleut Basketry Practicum** (h)
1 Credit Offered As Demand Warrants
Introduction to techniques of Aleut basketry, including design elements and Attu, Atka and Unalaska style lids and knobs. Historical and artistic overview of the art form. Offered at Aleutian/Regional Center only. (0+3)

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ART F127 **Introduction to Weaving** (h)
3 Credits
Fundamentals of weaving taught through basic techniques and processes for four-shaft loom woven structures. Includes loom terminology and function, warping and threading, basic pattern drafting and designing, color and texture. Introduces tapestry techniques. Special fees apply. (1+4)

ART F161 **Two-Dimensional Design** (h)
3 Credits
Fundamentals of pictorial form; principles of composition, organization, and structure. Special fees apply. (1+4)

ART F162 **Color and Design** (h)
3 Credits
Fundamentals of color principles and interactions. Emphasis on two dimensions. Special fees apply. (1+4)

ART F163 **Three-Dimensional Design** (h)
3 Credits
Provides an introduction to fundamental concepts and organization of three-dimensional forms, which include but are not limited to the applied arts and industrial design. Various materials such as clay, glass, metal and wood will be utilized. Special fees apply. (1+4)

ART F172 **Previsualization and Preproduction for Digital Cinema** (h)
3 Credits Offered Spring Even-numbered Years
Previsualization is a collaborative process that generates preliminary versions of shots or sequences, predominantly using 3D animation tools and a virtual environment. It enables filmmakers to visually explore creative ideas, plan technical solutions and communicate a shared vision for efficient production. Laying a foundation for cinema production, this course will explore screenwriting, storyboarding, previsualization animation, animatics and film pre-production approaches. This course will focus on developing original stories for animation or dramatic film productions and preparing those concepts for cinematic production. Cross-listed with THR F172 and FLM F172. (3+0)

ART F200X **Aesthetic Appreciation: Interrelation of Art, Drama, and Music** (h)
3 Credits
Understanding and appreciation of art, drama, and music through an exploration of their relationships. Topics include the creative process, structure, cultural application and diversity, the role of the artist in society, and popular movements and trends. ***Prerequisites: placement in ENGL F111X or higher; sophomore standing; or permission of instructor.*** Cross-listed with MUS F200X; THR F200X. (3+0)

ART F201 **Beginning Ceramics** (h)
3 Credits
Foundation experience with clay. Overview of the medium of ceramics and its possibilities. Special fees apply. ***Prerequisites: ART F105; ART F161 or ART F162 or ART F163; or permission of instructor.*** (1+4)

ART F205 **Intermediate Drawing** (h)
3 Credits
Exploration of pictorial composition and creative interpretation of subjects. Special fees apply. ***Prerequisites: ART F105.*** (1+4)

ART F207 **Beginning Printmaking** (h)
3 Credits
Concepts and techniques of printmaking. Subject areas taken from relief, intaglio, serigraphy and lithography. Special fees apply. ***Prerequisites: ART F105; ART F161 or ART F162 or ART F163; or permission of instructor.*** (1+4)

ART F209 **Beginning Metalsmithing and Jewelry** (h)
3 Credits
Basic techniques of fine metalsmithing and jewelry. Special fees apply. ***Prerequisites: ART F105; ART F161 or ART F162 or ART F163; or permission of instructor.*** (1+4)

ART F211 **Beginning Sculpture** (h)
3 Credits
Basic sculpture techniques and principles. Special fees apply. ***Prerequisites: ART F105; ART F161 or ART F162 or ART F163; or permission of instructor.*** (1+4)

ART F213 **Beginning Painting** (Acrylic or Oil) (h)
3 Credits
Basic materials and techniques in either medium. Pictorial principles and organization of paintings. ***Prerequisites: ART F105; ART F161 or ART F162 or ART F163; or permission of instructor.*** (1+4)

ART F223 **Watercolor Painting** (h)
3 Credits Offered As Demand Warrants
Painting in various transparent and opaque media (watercolor, tempera, polymer, casein). Emphasis on techniques and subjects. ***Prerequisites: ART F105; ART F161 or ART F162 or ART F163; or permission of instructor.*** (1+4)

ART F227 **Woven Fabric Design** (h)
3 Credits
Continuation of ART F127. Exploration of color and texture in loom structures. Includes basic fiber technology and color theory. Topics vary each semester and include blocks, units, laces, twills and R.A.G.S. recycle. Course may be repeated for credit when topic changes. ***Prerequisites: ART F127.*** (1+4)

ART F233 **Beginning Field Painting** (h)
1 Credit Offered As Demand Warrants
Introductory course consists of three or four days painting at outdoor locations, usually in the summer. Lectures and directed study are used to establish student understanding of landscape painting from drawing and/or small painted studies to finished oil and acrylic paintings. Use of basic painting and drawing materials will be covered. Concepts of space, light, color, composition, scale and specific elements of landscape paintings such as water, reflections, skies, aerial and linear perspective will be addressed. Sessions will be in the field with some supporting sessions in the studio. Courses in the past have been held at Denali, McCarthy, Brooks Range, Valdez and Cordova. ***Recommended: ART F105; ART F213.*** (0.5+1.5)

ART F247 **Introduction to Theatrical Design** (h)
3 Credits Offered Fall
Introduction to all the design elements used in the theatre. Analysis of line, texture, color, and how they relate to designing for the theatre including costumes, scenery and lighting. Cross-listed with THR F247. (3+0)

ART F261 **History of World Art** (h)
3 Credits Offered Fall
Origins of art and its development from the beginning through contemporary painting, sculpture and architecture. ART F261-262 may be taken in reverse order; however, course content is presented in a chronological sequence beginning with fall semester. ***Prerequisites: Sophomore standing.*** (3+0)

ART F262 **History of World Art** (h)
3 Credits Offered Spring
Origins of art and its development from the beginning through contemporary painting, sculpture and architecture. ART F261-262 may be taken in reverse order; however, course content is presented in a chronological sequence beginning with fall semester. ***Prerequisites: Sophomore standing.*** (3+0)

ART F268 **Beginning Native Art Studio** (h)
3 Credits
Understanding and applying the traditional designs and technologies of Native art. Special fees apply. ***Prerequisites: ART F105 or permission of instructor.*** Cross-listed with ANS F268. (1+4)

ART F301 **Intermediate Ceramics** (h)
3 Credits
Continuation of beginning ceramics. Emphasis on developing proficiency in ceramic studio practices and processes. Special fees apply. ***Prerequisites: ART F201 or permission of instructor.*** (1+4)

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ART F305 **Advanced Drawing** (h)
3 Credits Offered Spring
Development and refinement of individual problems in drawing. Can be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F205 or permission of instructor.*** (1+4)

ART F307 **Intermediate Printmaking** (h)
3 Credits
Continuation of ART F207 with emphasis on refinement of technique and color printing. Special fees apply. ***Prerequisites: ART F207 or permission of instructor.*** (1+4)

ART F309 **Intermediate Metalsmithing and Jewelry** (h)
3 Credits
Further investigation of material processes and techniques; some emphasis on design. Special fees apply. ***Prerequisites: ART F209 or permission of instructor.*** (1+4)

ART F311 **Intermediate Sculpture** (h)
3 Credits
Exploration in materials and concepts of sculpture. Emphasis on personal creativity and skill development. Special fees apply. ***Prerequisites: ART F211 or permission of instructor.*** (1+4)

ART F313 O **Intermediate Painting** (h)
3 Credits
Continued development of expressive skills in painting in any media. Emphasis on pictorial and conceptual problems. ***Prerequisites: ART F213; COMM F131X or COMM F141X.*** (1+4)

ART F324 **Watercolor Painting and Composition** (h)
3 Credits Offered Every Third Spring
Development of individual approach to watercolor media. Can be repeated for credit with permission of instructor. ***Prerequisites: ART F223.*** (1+4)

ART F333 **Intermediate Field Painting** (h)
1 Credit Offered As Demand Warrants
Intermediate course consists of three or four days painting at outdoor locations, usually in the summer. Lectures and directed study are used to broaden student understanding of landscape painting from drawings and/or small painted studies to finished oil and acrylic paintings. Concepts of space, light, color, composition, scale and specific elements of landscape paintings such as water, reflections, skies, aerial and linear perspective will be addressed. Sessions will be in the field with some supporting sessions in the studio. Courses in the past have been held at Denali, McCarthy, Brooks Range, Valdez and Cordova. ***Prerequisites: ART F213 or ART F233. Recommended: ART F105; ART F205.*** (0.5+1.5)

ART F347 O **Lighting Design** (h)
3 Credits Offered Fall Even-numbered Years
Principles and techniques of theatrical lighting design. The student will conduct practical experiments and design projects applying the experience gained. Student will spend approximately $40 for materials for this class. Also available via Independent Learning. ***Prerequisites: COMM F131X or COMM F141X; THR F343; or permission of instructor. May be taken concurrently with THR F343.*** Cross-listed with FLM F347; JRN F347; THR F347. (3+0)

ART F360 **Indigenous Art and Culture** (h)
3 Credits Offered As Demand Warrants
Overview of the aesthetic expressions of the cultures of Africa, Oceania and Native North America. Cultural and social factors will be studied through the visual art from these areas. Cross-listed with ANTH F360. (3+0)

ART F363 W **History of Modern Art** (h)
3 Credits Offered Spring Odd-numbered Years
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, Nonobjective Art, Abstract Expressionism, Pop Art, Realism and many other "isms." ***Prerequisites: ART F262; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** (3+0)

ART F364 W **Italian Renaissance Art** (h)
3 Credits Offered Spring Even-numbered Years
Development of the Renaissance from early Florentine to the High Renaissance of Venice. Study of art by Massacio, Michelangelo, DaVinci, Titian, etc. ***Prerequisites: ART F261; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** (3+0)

ART F365 W **Native Art of Alaska** (h)
3 Credits Offered Fall
Art forms of the Eskimo, Indian and Aleut from prehistory to the present. Changes in forms through the centuries. ***Prerequisites: Advanced standing or permission of instructor.*** Cross-listed with ANS F365; ANTH F365. (3+0)

ART F366 **Northwest Coast Indian Art** (h)
3 Credits Offered As Demand Warrants
Arts of the Northwest Coast Indians and the place of art in their culture. Cross-listed with ANS F366; ANTH F366. (3+0)

ART F367 **Eskimo Art** (h)
3 Credits Offered Spring Even-numbered Years
Eskimo art from Alaska, Canada and Siberia beginning with the earliest known pieces to the beginning of the 20th century. Cross-listed with ANS F367; ANTH F367. (3+0)

ART F368 **Intermediate Native Art Studio** (h)
3 Credits
Understanding and applying advanced traditional designs and technologies of Native art. Special fees apply. ***Prerequisites: ART F268 or permission of instructor.*** Cross-listed with ANS F368. (1+4)

ART F371 O **Digital Photography and Pixel Painting**
3 Credits
An introduction to the world of digital imaging with applications in fine and commercial art. It is expected that students will become competent at creating real-looking images of impossible subjects as well as detecting their creation by others. The varied ethical issues engendered by this expertise will be addressed in depth. Students will be required to gain proficiency in visual design for electronic and print publication. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; Macintosh OS or Windows OS experience with graphic applications; one college level studio art course.*** Cross-listed with JRN F371; FLM F371. (1+4)

ART F401 **Advanced Ceramics** (h)
3 Credits
Emphasis on developing as aesthetically perceptive and technically proficient ceramic artist. Individual and group projects include kiln firings. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F301 or permission of instructor.*** (1+4)

ART F402 **Anthropology of Art** (s)
3 Credits Offered As Demand Warrants
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.*** Cross-listed with ANTH F402. Stacked with ANTH F602. (3+0)

ART F407 O **Advanced Printmaking** (h)
3 Credits
Individual development of technical and creative processes. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F307; COMM F131X or COMM F141X.*** (1+4)

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ART F409 Advanced Metalsmithing and Jewelry (h)
3 Credits
Materials and processes; introduction to holloware skills and forging. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F309 or permission of instructor.*** (1+4)

ART F411 Advanced Sculpture (h)
3 Credits
Principles, practices and concepts of sculpture. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F311 or permission of instructor.*** (1+4)

ART F413 O Advanced Painting (h)
3 Credits
Individual experimentation and technical/conceptual development in painting. Can be repeated for credit with permission of instructor. ***Prerequisites: ART F313; COMM F131X or COMM F141X.*** (1+4)

ART F417 Lithography (h)
3 Credits Offered Every Third Spring
An exploration of stone and metal plate lithography. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F105; ART F207; or permission of instructor.*** (1+4)

ART F419 Life Drawing (h)
3 Credits
Drawing from life; study of artistic anatomy. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F305 or permission of instructor.*** (1+4)

ART F424 O Field Artists of the North (h)
3 Credits Offered As Demand Warrants
Study of field artists and their work, from the explorer artists of yesteryear to today's field artists using a variety of traditional and contemporary media in their creations. Students will conceive and conduct their own study projects, producing a body of work that will demonstrate the principles and practice of a field artist. ***Prerequisites: ART F105; a studio art course (ART F161, ART F162, ART F163, ART F205, ART F211, ART F213 or JRN F203); COMM F131X or COMM F141X.*** Stacked with ART F624; NORS F624. (3+0)

ART F425 W Visual Images of the North
3 Credits
Examination of the imagery of the people and landscapes of the polar regions, centering on such issues as depiction of arctic peoples and customs by Europeans, documentary versus artistic goals, translations from original sketches to published images, relationship of polar imagery to prevailing historical styles and the influence of changing world views on modes of polar representation between the 16th and 20th centuries. ***Prerequisites: ENGL F111X; ENGL F211X or F213X; or permission of instructor.*** Cross-listed with NORS F425. (3+0)

ART F427 Relief (h)
3 Credits Offered Every Third Fall
Woodcut and monotype with emphasis on color. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F105; ART F207; ART F213; or permission of instructor.*** (1+4)

ART F433 Advanced Field Painting (h)
1 Credit Offered As Demand Warrants
Advanced course consists of three or four days painting at outdoor locations, usually in the summer. Lectures and directed study are used to broaden and develop student understanding of landscape painting from drawings and/or small painted studies to finished oil and acrylic paintings. Concepts of space, light, color, composition, scale and specific elements of landscape paintings such as water, reflections, skies, aerial and linear perspective will be addressed. Emphasis will be on individual experimentation and technical/conceptual development. Sessions will be in the field with some supporting sessions in the studio. Courses in the past have been held at Denali, McCarthy, Brooks Range, Valdez and Cordova. ***Prerequisites: ART F313 or ART F333.*** (0.5+1.5)

ART F437 Intaglio (h)
3 Credits
Intaglio printmaking with emphasis on experimentation and color photo intaglio printing. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F105; ART F162; ART F207; or permission of instructor.*** (1+4)

ART F441 Lost Wax Casting (h)
3 Credits Offered Every Third Spring
Design and execution of jewelry and other small metal objects by lost wax casting. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F409 or permission of instructor.*** (1+4)

ART F442 Nonferrous Forging (h)
3 Credits Offered Every Third Spring
Design and execution of hammer-forged nonferrous metal objects. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F409 or permission of instructor.*** (1+4)

ART F447 Silkscreen (h)
3 Credits Offered As Demand Warrants
Silkscreen printing with photo process. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F105; ART F162; ART F207; or permission of instructor.*** (1+4)

ART F450 Raku Pottery (h)
3 Credits Offered As Demand Warrants
Raku clay bodies, glazes and decorations. Kiln building. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F201 or permission of instructor.*** (1+4)

ART F451 Earthenware (h)
3 Credits Offered As Demand Warrants
Earthenware clay bodies, glazes, decorations and firing techniques. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F201 or permission of instructor.*** (1+4)

ART F452 Porcelain (h)
3-12 Credits Offered As Demand Warrants
Porcelain clay bodies, glazes, decorations and firing techniques. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F201 or permission of instructor.*** (1+4)

ART F453 Kiln Design and Construction (h)
3 Credits Offered As Demand Warrants
Kiln design and construction including building and firing a kiln. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F201 or permission of instructor.*** (1+4)

ART F457 O Papermaking (h)
3 Credits Offered As Demand Warrants
Production of paper from rags and linters for use as an end in itself as well as a support for art. Two- and three-dimensional projects are required. Experimentation is encouraged. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F105; ART F207; ART F163 or ART F211; COMM F131X or COMM F141X; or permission of instructor.*** (1+4)

ART F458 O Elementary Internship
3-15 Credits
Supervised teaching in elementary schools approved by the School of Education. Students should expect to be involved in the school setting for some or all of the school day (depending on the number of credits taken) for the entire university semester. The School of Education may limit enrollment, determine assignments and cancel the registration of students doing unsatisfactory work. Graded Pass/Fail. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; successful completion of methods practicum and methods course-work with a C or better. Post-baccalaureate students must be admitted to the Art K-12 licensure program. Passing Praxis I scores.*** Cross-listed with ED F452. (1+0+42)

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ART F459 O **Secondary Internship**
3-15 Credits
Supervised teaching in secondary schools approved by the School of Education. Students should expect to be involved in the school setting for some or all of the school day (depending upon number of credits taken) for the entire university semester. The School of Education may limit enrollment, determine assignments and cancel the registration of students doing unsatisfactory work. Graded Pass/Fail. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; successful completion of methods practicum and methods course work with a C or better. Post-baccalaureate students must be admitted to K-12 Art licensure program. Passing Praxis I scores.*** Cross-listed with ED F453. (1+0+42)

ART F460 **Cross-Cultural Filmmaking** (h)
3 Credits Offered Fall Odd-numbered Years
The use of film as a documentary tool for describing and understanding scientific and cultural phenomenon has led to the education of generations. Understanding the implications of our film work with a theoretical base for cultural understanding, scientific need and educational potentials will strengthen the film's integrity and production methods in creating video documents useful as a scientific/cultural record. Pre- production will include research of archival visual media, oral histories and print materials; analysis of educational and scientific funding and distribution options and preliminary interviews, location scouting and film treatment. Production will include time on location with small film crews, media logging and record keeping. Post-production will include basic editing of sequences for distribution. Cross-listed with ANTH F460 and FLM F460. ***Prerequisites: Junior, senior or graduate standing or permission of instructor.*** (3+0)

ART F463 **Seminar in Art History** (h)
3 Credits Offered Fall Odd-numbered Years
A seminar providing a forum for discussion of a particular historical period or art historical idea. Topics vary each semester and will not be repeated during a two-year period. Topics include: art since 1945, women in twentieth-century art, the American landscape tradition, etc. Stacked with ART F663. (3+0)

ART F467 **Photoprocess Printmaking** (h)
3 Credits Offered Every Third Spring
Production of etchings, lithographs and silkscreen prints using photo mechanical processes. Elements of electrophotography and desktop publishing explored. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F105; ART F262; ART F207; or permission of instructor.*** (1+4)

ART F468 **Advanced Native Art Studio** (h)
3 Credits
Advanced traditional designs and technologies of Native art. Use of contemporary materials to interpret traditional forms. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F368 or permission of instructor.*** Cross-listed with ANS F468. (1+4)

ART F469 W **Architecture: Art, Design, Technology and Social Impact** (h)
3 Credits Offered Spring Even-numbered Years
Concepts of environmental, urban and industrial design. Relationship of human and natural environment is stressed in this history of architecture with special attention given to contemporary conditions in urban areas and effects of industrialization and mechanization on human living and working spaces, artistic design and aesthetics. ***Prerequisites: ART F261 and ART F262 or HUM F201X and HUM F202; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** Cross-listed with HUM F469. (3+0)

ART F471 O **Advanced Digital Design** (h)
3 Credits Offered Spring
Project-oriented class in graphic design with applications from journalism to fine and commercial art. Students will be expected to have a background in programs likely to include web design, digital photography and graphic design. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; JRN F250; JRN F350 or ART F371 or JRN F371; one college level studio art course.*** Cross-listed with JRN F471. (1+4)

ART F472 O **Visualization and Animation** (h)
3 Credits Offered Fall
An introduction to visualization and animation with applications in fine and commercial art and science. Students will produce a series of three dimensional animation projects which will introduce them to the tools and concepts used by animation and visualization professionals. Note: May be repeated for credit. Special fees apply. ***Prerequisites: ART F371 or equivalent; COMM F131X or COMM F141X.*** Cross-listed with FLM F472; JRN F472. (1+4)

ART F474 W **History of the Role of the Artist** (h)
3 Credits Offered Spring Even-numbered Years
Survey of theory and practices of professional training and education of the artist in relationship to political, social and philosophical conditions. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor. Recommended: ART F261; ART F262.*** Stacked with ART F673. (3+0)

ART F475 **Digital Video Compositing** (h)
3 Credits Offered As Demand Warrants
Digital compositing techniques for creating moving imagery. The course covers video manipulation, layering images, synthesizing realistic video imagery, integration of live action and computer generated animation. Course can be repeated for a total of nine credits with permission of instructor. ***Prerequisites: ART F472 or JRN F472 or FLM F472 or equivalent.*** Cross-listed with FLM F475. (1+4)

ART F477 **Monotypes and Monoprints** (h)
3 Credits Offered As Demand Warrants
Exploration and practice of creating singular, unique prints, which are not expected to be editioned. Contemporary and traditional techniques practiced with an emphasis on drawing, color and design in the finished print compositions. Special fees apply. ***Prerequisites: ART F105. Recommended: ART F161 or ART F162; ART F207.*** (1+4)

ART F484 **Multimedia Theory and Practice** (h)
3 Credits Offered Spring
Study of techniques needed to produce multimedia with a special project for a university or community agency as the required final project. For the purpose of this course multimedia is defined as computer-based, user-driven products with audio, visual and text components and also video or film where appropriate. Primary program is Flash. Special fees apply. ***Prerequisites: Understanding of computer graphics [programs like Illustrator, Freehand, etc.] plus some mastery of a specialty like writing, art, or television production.*** Cross-listed with JRN F484. Stacked with ART F684; JRN F684. (3+3)

ART F490 **Current Problems**
3 Credits Offered Fall Even-numbered Years
A forum for discussion of those aesthetic and professional problems confronted by artists. Topics are agreed upon by instructor and students, and students research and lead discussion on these topics. Topics may include: approaches to figuration of contemporary painting and sculpture, health hazards for the professional artist, portfolio development and access to galleries, making art far from major cultural centers, etc. Stacked with ART F690. (3+0)

ART F499 **Thesis Project**
1-3 Credits
Directed work toward individual exhibition; completed outside regularly scheduled classes. Required for B.F.A. candidates. ***Prerequisites: Senior standing.*** (0+0)

ART F601 **Ceramics**
1-6 Credits Offered As Demand Warrants
Exploration of selected topics in ceramics with lectures, demonstrations, independent research and production of ceramics at a level commensurate with graduate standing. May be repeated for credit. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor.*** (0+0)

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ART F603 Graduate Photography
2-6 Credits Offered As Demand Warrants
Exploration of selected topics in photography, with lectures, demonstrations, independent research and production of photography at a level commensurate with graduate standing. May be repeated for credit. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor.*** (1+2-8)

ART F605 Drawing
1-6 Credits Offered As Demand Warrants
Exploration of topic in general drawing with lectures, demonstrations and independent research and production of drawing at a level commensurate with graduate standing. May be repeated for credit. ***Prerequisites: ART F305 or equivalent; and graduate standing.*** (0+0)

ART F607 Printmaking
1-6 Credits Offered As Demand Warrants
Exploration of selected topics in printmaking with lectures, demonstrations, independent research and production of printmaking at a level commensurate with graduate standing. May be repeated for credit. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor.*** (0+0)

ART F609 Metalsmithing
1-6 Credits Offered As Demand Warrants
Exploration of selected topics in metalcraft with lectures, demonstrations, independent research and production of metalcraft at a level commensurate with graduate standing. May be repeated for credit. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor.*** (0+0)

ART F611 Sculpture
1-6 Credits Offered As Demand Warrants
Exploration of selected topics in sculpture with lectures, demonstrations, independent research and production of sculpture at a level commensurate with graduate standing. May be repeated for credit. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor.*** (0+0)

ART F613 Painting
1-6 Credits Offered As Demand Warrants
Exploration of selected topics in painting with lectures, demonstrations, independent research and production of painting at a level commensurate with graduate standing. May be repeated for credit. ***Prerequisites: Graduate standing or permission of instructor.*** (0+0)

ART F619 Life Drawing
1-6 Credits
Exploration of selected topics in drawing with lectures, demonstrations, independent research and production of drawing at a level commensurate with graduate standing. May be repeated for credit. ***Prerequisites: Graduate standing or permission of instructor.*** (0+0)

ART F624 Field Artists of the North
3 Credits Offered As Demand Warrants
Study of field artists and their work, from the explorer artists of yesteryear to today's field artists using a variety of traditional and contemporary media in their creations. Students will conceive and conduct their own study projects, producing a body of work that will demonstrate the principles and practice of a field artist. ***Prerequisites: ART F105 and a studio art course (ART F161, ART F162, ART F163, ART F205, ART F211, ART F213 or JRN F203.)*** Cross-listed with NORS F624. Stacked with ART F424. (3+0)

ART F625 Visual Images of the North
3 Credits Offered Spring Odd-numbered Years
Examination of the two-dimensional imagery of the people and landscapes of the polar regions, centering on such issues as depiction of arctic peoples and customs by Europeans, documentary vs. artistic goals, translations from original sketches to published images, relationship of polar imagery to prevailing historical styles, and the influence of changing world views on modes of polar representation between the 16th and 20th centuries. Cross-listed with NORS F625. (3+0)

ART F633 Graduate Field Painting (h)
1 Credit
Consists of three or four days painting at outdoor locations, usually in the summer. Lectures and directed study are used to further develop understanding of landscape painting from drawings and/or small painted studies to finished oil and acrylic paintings. Concepts of space, light, color, composition, scale and specific elements of landscape paintings such as water, reflections, skies, aerial and linear perspective will be addressed. Emphasis will be on individual experimentation and technical/ conceptual development consistent with graduate level art courses. Sessions will be in the field with some supporting sessions in the studio. Courses have been held at Denali, McCarthy, Brooks Range, Valdez and Cordova ***Prerequisites: ART F413; ART F433; or permission of instructor.*** (6+21)

ART F648 Native Arts
1-6 Credits
Advanced traditional designs and technologies of Native art. Use of contemporary materials to interpret traditional forms. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ART F468; graduate standing; or permission of instructor.*** (0+0)

ART F661 Mentored Teaching in Art
1 Credit Offered As Demand Warrants
Mentored teaching provides consistent contact of course-related issues between teaching assistants and mentoring faculty. Graduates are required to be enrolled in a mentored teaching section while teaching. Graded Pass/ Fail. ***Prerequisites: Graduate standing or permission of instructor. Note: May be repeated for credit.*** (1+0)

ART F663 Seminar in Art History
3 Credits Offered Fall Odd-numbered Years
A forum for discussion of a particular historical period or art historical idea. Topics vary each semester and will not be repeated during a two-year period. Topics include art since 1945, women in twentieth-century art, the American landscape tradition, etc. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with ART F463. (3+0)

ART F671 Two- and Three-Dimensional Computer Design
1-6 Credits
Visualization and animation with applications to two- and three-dimensional computer design and typography. Emphasis on visual design for electronic and print publication. Includes animation of the components of 3-D models. May be repeated for credit. Special fees apply. ***Prerequisites: ART F471; graduate standing; or permission of instructor.*** (0+0)

ART F672 Advanced Computer Visualization in Art
1-6 Credits Offered As Demand Warrants
Computer visualization in art with production and reproduction of projects chosen from a wide range of topics. Includes lectures, demonstrations and laboratory experience. May be repeated for credit. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor.*** (0+0)

ART F673 History of the Role of the Artist
3 Credits Offered Spring Even-numbered Years
Survey of theory and practices of professional training and education of the artist in relationship to political, social and philosophical conditions. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with ART F474. (3+0)

ART F684 Multimedia Theory and Practice
3 Credits Offered Spring
Study of techniques needed to produce multimedia with a special project for some university or community agency as the required final project. For the purpose of this course multimedia is defined as computer based, user-driven products with audio, visual and text components, and also video or film where appropriate. Primary program is Flash. Special fees apply. ***Prerequisites: Understanding of computer graphics (programs like Illustrator, Freehand, etc.) plus some mastery of a specialty like writing, art, or television production.*** Cross-listed with JRN F684. Stacked with ART F484; JRN F484. (3+0)

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ART F690 **Current Problems**
3 Credits Offered Fall Even-numbered Years
A forum for discussion of aesthetic and professional problems confronted by artists. Topics are agreed upon by instructor and students, and students research and lead discussion on these topics. Topics may include: approaches to figuration of contemporary painting and sculpture, health hazards for the professional artist, portfolio development and access to galleries, making art far from major cultural centers, etc. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with ART F490. (3+0)

ATMOSPHERIC SCIENCES

ATM F101X **Weather and Climate of Alaska** (n)
4 Credits Offered Spring
Focus on the Alaska atmosphere as an important part of our environment. Includes fundamental laws of physics and chemistry, the behavior of atmospheres on rotating planets, clouds, precipitation and weather systems. Includes societal impacts of weather worldwide and investigations into global climate change. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (3+3)

ATM F401 **Introduction to Atmospheric Sciences**
3 Credits Offered Fall
Fundamentals of atmospheric science. Includes energy and mass conservation, internal energy and entropy, atmospheric water vapor, cloud microphysics, equations of motion, hydrostatics, phase oxidation, heterogeneous chemistry, the ozone layer, fundamentals of biogeochemical cycles, solar and terrestrial radiation and radiative-convective equilibrium. Also includes molecular, cloud and aerosol absorption and scattering. ***Prerequisites: CHEM F105X; CHEM F106X; MATH F302; PHYS F212X.*** Stacked with ATM F601; CHEM F601. (3+0)

ATM F413 **Atmospheric Radiation**
3 Credits Offered Fall Odd-numbered Years
Atmospheric radiation including the fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds and radiation climatology. ***Prerequisites/Co-requisites: ATM F401.*** Stacked with ATM F613; cross listed with PHYS F413. (3+0)

ATM F444 **Synoptic Analysis and Forecasting**
3 Credits Offered Spring Even-numbered Years
Weather systems and the techniques used to understand and predict their behavior. Topics include atmospheric observations, synoptic analysis techniques, satellite image interpretation, kinematics, fronts and frontogenesis, life cycles of extratropical cyclones, mesoscale phenomena, numerical weather prediction and interpretation of forecast products. ***Prerequisites: ATM F401; ATM F445.*** Stacked with ATM F644. (3+0)

ATM F445 **Atmospheric Dynamics**
3 Credits Offered Fall Even-numbered Years
Fundamentals of equations of motion, conservation laws, balance relationships and coordinate systems. Vorticity dynamics includes vortex filaments and tubes, vorticity equations, Rossby-Haurwitz waves, Ertel's PV principle for the potential vorticity, EPV in isentropic coordinates. Includes balance and quasi-geostrophy, QG theory, scaling of the QG system, the w equation, QG and numerical modeling. ***Prerequisites/co-requisites: ATM F401.*** Stacked with ATM F645. (3+0)

ATM F456 **Climate and Climate Change**
3 Credits Offered Fall Odd-numbered Years
The climate of planet Earth and its changes with time. Radiative fluxes, greenhouse effects, energy budget, hydrological cycle, the atmospheric composition and climatic zones. Physical and chemical reasons for climatic change. ***Prerequisites: Any 400 level Physics or Chemistry course or ATM F401 or permission of instructor; basic computer skills.*** (3+0)

ATM F488 **Undergraduate Research**
1-3 Credits
Advanced research topics from outside the usual undergraduate requirements. ***Prerequisites: Permission of instructor. Recommended: A substantial level of technical/scientific background.*** (0+0)

ATM F601 **Introduction to Atmospheric Sciences**
3 Credits Offered Fall
Fundamentals of atmospheric science. Includes energy and mass conservation, internal energy and entropy, atmospheric water vapor, cloud microphysics, equations of motion, hydrostatics, phase oxidation, heterogeneous chemistry, the ozone layer, fundamentals of biogeochemical cycles, solar and terrestrial radiation and radiative-convective equilibrium. Also includes molecular, cloud and aerosol absorption and scattering. ***Prerequisites: Graduate standing.*** Cross-listed with CHEM F601. Stacked with ATM F401. (3+0)

ATM F606 **Atmospheric Chemistry**
3 Credits Offered Spring Odd-numbered Years
Chemistry of the lower atmosphere (troposphere and stratosphere) including photo chemistry, kinetics, thermodynamics, box modeling, biogeochemical cycles and measurements techniques for atmospheric pollutants. Study of important impacts to the atmosphere which result from anthropogenic emissions of pollutants, including acid rain, the "greenhouse" effect, urban smog and stratospheric ozone depletion. ***Prerequisites/co-requisites: ATM F601 or permission of instructor.*** Cross-listed with CHEM F606. Stacked with CHEM F406. (3+0)

ATM F613 **Atmospheric Radiation**
3 Credits Offered Fall Odd-numbered Years
Fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds, and radiation climatology. ***Prerequisites/co-requisites: ATM F601; graduate standing.*** Stacked with ATM F413; cross listed with PHYS F613. (3+0)

ATM F615 **Cloud Physics**
3 Credits Offered Spring Even-numbered Years
Basic properties of condensed water vapor in the atmosphere. Formation and behavior of clouds including the nature of atmospheric aerosols, nucleation and growth of water droplets and ice crystals, the development of precipitation, nature of mixed-phase (water and ice) clouds, how transfer of radiation depends on the character of clouds, and how humans are modifying clouds and precipitation both intentionally and unintentionally. Field trips will collect data at the Arctic Facility for Atmospheric Remote Sensing (AFARS). Microscopic examination and have available for use of a sophisticated cloud model. ***Prerequisites: ATM F601; graduate standing; or permission of instructor.*** (3+0)

ATM F620 **Climate Journal Club Seminar**
1 Credit Offered Spring
The "Climate Group" is in informal meeting for researchers and graduate students. The seminars alternate between progress reports on ongoing research and journal club contributions. The main interests articles, formal and informal presentation by locals and visitors will be on the agenda. Participating students will be exposed to a free format discussion of modern ideas in climate related disciplines. All students are encouraged to contribute and students taking the course for credit are required to lead the discussion for one session. This may include the presentation of a research plan/results, or a discussion of a journal article. Students will be graded on at least one presentation and participation in the class. Graded Pass/Fail. ***Prerequisites: Graduate standing or permission of instructor.*** (1+0)

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ATM F621 **Introduction to Computational Meteorology**
1 Credit Offered Fall
Introduce the basic knowledge on how to apply software related to atmospheric sciences problems. This includes knowledge of UNIX/LINUX, FORTRAN90, IDL, ncl, Mathlab and how to read NetCDF files, grib-files, etc., which are special data formats in which climate data are available. Students will learn how to run given software products on UNIX/LINUX and other platforms and basic tools to modify these programs for their purposes. ***Prerequisites: Graduate standing*** (1+0)

ATM F624 **Oceanic-Atmospheric Gravity Waves**
3 Credits Offered Spring; As Demands Warrants
An introduction to the dynamics of surface and internal gravity waves in non-rotating and rotating fluids including, derivation/solutions of the wave equation, approximations to the governing equations, particle motions and wave energetics, dispersion relationships, phase and group velocities, normal mode and WKB theory, refraction, reflection, critical layer absorption, wave instabilities. ***Prerequisites: MSL F620; MATH F302; or permission of instructor.*** Cross-listed with MSL F624. (3+0)

ATM F631 **Environmental Fate and Transport**
3 Credits Offered Spring Even-numbered Years
Examination of the physical properties that govern the behavior, fate and transport of contaminants released into the environment. Topics include air-water partitioning and exchange, organic solvent-water partitioning, diffusion, sorption, chemical and biological transformation reactions, and modeling concepts. Cross-listed with CHEM F631. (3+0)

ATM F644 **Synoptic Analysis and Forecasting**
3 Credits Offered Spring Even-numbered Years
Weather systems and the techniques used to understand and predict their behavior. Topics include atmospheric observations, synoptic analysis techniques, satellite image interpretation, kinematics, fronts and frontogenesis, life cycles of extratropical cyclones, mesoscale phenomena, numerical weather prediction and interpretation of forecast products. ***Prerequisites: ATM F601; ATM F645.*** Stacked with ATM F444. (3+0)

ATM F645 **Atmospheric Dynamics**
3 Credits Offered Fall Even-numbered Years
Examination of the fundamental forces and basic conservation laws that govern the motion of the atmosphere. Topics include momentum, continuity equations, circulation, vorticity, thermodynamics, the planetary boundary layer and synoptic scale motions in mid-latitudes. ***Prerequisites/co-requisites: ATM F601; graduate standing.*** Stacked with ATM F445. (3+0)

ATM F646 **Atmospheric Dynamics II**
3 Credits Offered Spring Odd-numbered Years
Continuation of ATM F645. Includes geophysical fluid dynamics as applied to the atmosphere. Topics include linear perturbation theory, gravity waves, Rossby waves, numerical weather prediction, baroclinic instability, frontogenesis, general circulation, stratospheric and tropical dynamics. ***Prerequisites: Graduate standing.*** (3+0)

ATM F647 **Fundamentals of Geophysical Fluid Dynamics**
3 Credits Offered Fall Odd-numbered Years
Introduction to the mechanics of fluid systems, the fundamental processes, Navier-Stokes' equations in rotating and stratified fluids, kinematics, conservation laws, vortex motion, irrotational flow, laminar flow, boundary layer phenomena, waves, instabilities, turbulent flows and mixing. Cross-listed with PHYS F647. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ATM F656 **Climate and Climate Change**
3 Credits Offered Fall Odd-numbered Years
The climate of planet Earth and its changes with time. Radiative fluxes, greenhouse effects, energy budget, hydrological cycle, the atmospheric composition and climatic zones. Physical and chemical reasons for climatic change. ***Prerequisites: Graduate standing; calculus, physics or related courses at F400-level, basic computer skills. Recommended: ATM F601 or ATM F401; basic computer knowledge to plot and analyze climate data.*** (3+0)

ATM F662 **Numerical Modeling and Parameterization Methods**
3 Credits Offered Spring Even-numbered Years
Construction of models from fundamental equations and the necessity of parametrizations. Simplification and discretization of equations, numerical methods, model-grids, analytical modeling, boundary and initial conditions, parametrizations and evaluation of model results. Scale-dependency, limitations of parametrizations and coupled modeling are elucidated. Students apply and code aspects of models themselves. ***Prerequisites: Graduate standing; calculus, physics or related F400-level basic computer skills. Recommended: ATM F601; basic knowledge in Fortran and UNIX/LINUX.*** (3+0)

ATM F678 **Mesoscale Dynamics**
3 Credits Offered As Demand Warrants
A comprehensive explanation of mesoscale air motions — their phenology, basic physics and mechanisms, why they build and how mesoscale motions interact with the micro and large scale. Classical and non-classical mesoscale circulations, super cell, single and multiple cell thunderstorm dynamics and tornado formation. ***Prerequisites: ATM F401 or ATM F601 or permission of instructor. Recommended: 400-level physics, calculus I to III.*** (3+0)

ATM F688 **Atmospheric Science Informal Seminar**
1 Credit Offered Spring
Review of ongoing research in atmospheric science to learn about research results, ideas and direction long before they are published in journals. Presentations cover the broad range of atmospheric sciences and links to other disciplines as required to answer questions on global variability, climate change and assessment studies. Graded Pass/Fail. ***Prerequisites: Graduate standing in physical sciences or permission of instructor.*** (1+0)

AUTOMOTIVE

AUTO F080 **Driver and Safety Education**
2 Credits Offered As Demand Warrants
Driver 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. (2+0)

AUTO F081 **Behind-the-Wheel Training**
1 Credit Offered As Demand Warrants
Practical driver training in actual situations. Expected student outcome is obtaining a State of Alaska driver's license. ***Prerequisites: Must have a valid Alaska Driver's Permit.*** (0+3)

AUTO F100 **Introduction to Small Engine Repair**
1 Credit Offered As Demand Warrants
Parts and functions of a small engine and its electrical system. Dismantling procedures, cleaning and reassembly techniques, gasket-making, lubrication, troubleshooting, and minor repairs. (1+0)

AUTO F102 **Introduction to Automotive Technology**
3 Credits Offered As Demand Warrants
Provides career information in the automotive industry. Shop safety, hand tools, fasteners, fittings, and an introduction to the major automotive systems. Special fees apply. (2+2)

AUTO F106 **Auto/Diesel Engine Cooling and Climate Control Systems**
4 Credits Offered As Demand Warrants
Theory, diagnostics and repair of motor vehicle A/C, heating, engine cooling and automatic temperature control systems. Covers R-12 and R-143 refrigerant recovery, and related EPA regulations. Special fees apply. ***Recommended: AUTO F110.*** (3+3)

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AUTO F110 **Basic Electrical Systems**
3 Credits Offered As Demand Warrants
The history and origins of electrical theory, the generation of electricity and diagnosis, minor repair and general servicing of alternators, starters and batteries. Special fees apply. (2+2)

AUTO F113 **Gasoline Fuel Delivery Systems**
4 Credits Offered As Demand Warrants
Basics of carburation and electronic fuel injection. Emphasis on theory, diagnostic/repair skills, inputs and outputs of the PCM, engine performance, use of on-board diagnostic data (OBD II) and special test equipment. Special fees apply. ***Recommended: AUTO F110.*** (2+2)

AUTO F122 **Engine Theory and Diagnosis**
3 Credits Offered As Demand Warrants
Introduction to fundamental aspects of engine design, general diagnosis and engine related service, to include combustion process, engine noise, basics of exhaust emissions, vacuum/pressure, compression, intake and exhaust systems, valve and ignition timing. Special fees apply. ***Prerequisites: AUTO F102 or instructor permission. Recommended: AUTO F110.*** (2+2)

AUTO F131 **Automotive Electrical II**
3 Credits Offered as Demand Warrants.
Theory, diagnosis and repair of automotive electrical/electronic systems to include testing tools, schematics and on-board computers. Special fees apply. ***Prerequisites: AUTO F110 or permission of instructor. Recommended: AUTO F102.*** (2+2)

AUTO F150 **Brake Systems**
4 Credits Offered As Demand Warrants
Theory, diagnosis and servicing of light- and heavy-duty vehicle hydraulic break and traction control systems. Includes discussion and tasks on disc brakes, drum brakes, power assist systems and anti-lock/traction controls. Special fees apply. ***Prerequisite: AUTO F110.*** (3+3)

AUTO F162 **Suspension Alignment**
4 Credits Offered As Demand Warrants
Theory, diagnosis and repair of suspension, steering and wheel alignment of automobiles and trucks. Special fees apply. (3+3)

AUTO F170 **Snowmachine Maintenance and Repair**
1 Credit Offered As Demand Warrants
Fundamental skills for operation and repair. Engine tune-up, lubrication, belt and track repair, alignment and basic problems encountered during operation. Graded Pass/Fail. Special fees apply. (1+0)

AUTO F172 **All-Terrain Vehicle Maintenance and Repair**
1 Credit Offered As Demand Warrants
Teaches fundamental skills for maintenance and repair of an All-Terrain Vehicle (ATV). Only one type of ATV will be the focus of the class, examples being: 4-wheelers, dirt bikes, hovercrafts. Engine tune-up, lubrication, clutch and belt, if applicable, transmission troubleshooting, tire and wheel repair, alignment and other basic problems encountered during operation along with safe shop procedures. Graded Pass/Fail. (1+0)

AUTO F190 **Automotive Practicum I**
1-6 Credits Offered as Demand Warrants.
Provides supervised workplace experience in selected industry settings. Integrates knowledge and practice to achieve competencies in basic skills. A maximum of 6 credits may be earned. ***Prerequisites: Advisor approval required.*** (0+0+1-6)

AUTO F202 **Auto Fuel and Emissions Systems**
4 Credits Offered As Demand Warrants
Builds on the skills and knowledge gained in AUTO F122. Combustion chemistry, volumetric efficiency, design and function of emission control devices, laws and regulations concerning vehicle emissions are covered, with an emphasis on interfacing with on-board computers, automotive computer networking, and four and five gas analysis. Special fees apply. ***Prerequisites: AUTO F102; AUTO F122.*** (3+2)

AUTO F209 **Automatic Transmissions and Transaxles**
5 Credits Offered As Demand Warrants
Automatic transmissions and transaxles. Includes the operation, diagnosis and repair of planetary gears, clutches, pumps, hydraulic controls and electronic shifting controls. Study and hands-on tasks. Special fees apply. ***Recommended: AUTO F110 strongly recommended.*** (4+3)

AUTO F215 **Engine Analyzer, Scopes and Scan Tools**
4 Credits Offered As Demand Warrants
Use and interpretation of diagnostic analyzers for spark ignition engines, digital data, fault code and input/output information retrieval, scan tool usage and other diagnostic tools used in the vehicle repair industry. Special fees apply. ***Recommended: AUTO F110.*** (3+3)

AUTO F219 **The Auto/Diesel Repair Business**
2 Credits Offered as Demand Warrants
Overview of practices common in the vehicle repair industry. Includes flat rate, repair order write-up, customer relations, repair industry related OSHA and EPA regulations, and financing and acquiring a repair business. Special fees apply. (2+0)

AUTO F222 **Automotive Engine Performance**
3 Credits Offered as Demand Warrants
Builds on skills and knowledge gained in AUTO F122 and AUTO F202. Applies strategies for diagnosing fuel and ignition systems, automotive computers and multiplexing. Includes communication strategies, on-board diagnostics, testing and diagnosis of engine performance-related components. Special fees apply. ***Prerequisites: AUTO F122; AUTO F202; or permission of instructor.*** (2+2)

AUTO F227 **Automotive Electrical III**
3 Credits Offered As Demand Warrants
The theory, diagnosis and repair of automotive electrical and electronic systems to include accessories. Special fees apply. ***Prerequisites: AUTO F131.*** (2+2)

AVIATION TECHNOLOGY

AVTY F100 **Private Pilot Ground School**
4 Credits Offered As Demand Warrants
Study of aircraft and engine operation and limitations, aircraft flight instruments, navigation, navigation computers, national weather information and dissemination services. Federal aviation regulations, flight information publications, radio communications and navigation. Preparation for FAA private pilot-airplane written exam. Also available via Independent Learning. (4+0)

AVTY F101 **Private Pilot Flight Training**
2 Credits Offered As Demand Warrants
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. ***Prerequisites: Department approval required.*** (2+0)

AVTY F102 **Commercial Ground Instruction**
3 Credits Offered As Demand Warrants
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. (3+0)

AVTY F103 **Commercial Flight Training**
2 Credits Offered As Demand Warrants
Flight instruction is arranged by student through approved pilot school or independent flight instructor. Training will meet federal aviation regulations.

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Course completion requires awarding of commercial pilot certificate. ***Prerequisites: Private Pilot certificate, AVTY F102 or concurrent enrollment, or passing score on FAA Commercial Pilot written exam, department approval required.*** (2+0)

AVTY F105 Seaplane Flight Training
1 Credit Offered As Demand Warrants
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.*** (1+0)

AVTY F107 Multi-Engine Flight Training
1 Credit Offered As Demand Warrants
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.*** (1+0)

AVTY F108 Introduction to Skis
1 Credit Offered As Demand Warrants
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. ***Prerequisites: Private pilot certificate.*** (1+0)

AVTY F109 Glider Flight Training
1 Credit Offered As Demand Warrants
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. ***Prerequisites: Department approval.*** (1+0)

AVTY F111 Fundamentals of Aviation
3 Credits
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. (3+0)

AVTY F116 Aviation History
3 Credits Offered As Demand Warrants
Aviation from its early days to the present. People, places and machines contributing to the development of Alaskan aviation. (3+0)

AVTY F121 Introduction to Aviation Safety
2 Credits Offered As Demand Warrants
An introduction to aviation safety designed to develop a positive attitude toward safety, refresh aeronautical knowledge and improve aeronautical skills. ***Prerequisites: Pilot's Certificate or enrollment in Aviation program. Proof required first day of class.*** (2+0)

AVTY F155 Preventive Maintenance
1-3 Credits Offered As Demand Warrants
Mechanics of the airplane, its powerplant and systems to enable the student to evaluate malfunctions and make maintenance decisions. Designed for the pilot-owner. Special fees apply. ***Prerequisites: Pilot's Certificate or enrollment in Aviation program. Proof required first day of class.*** (1-3+0)

AVTY F200 Instrument Ground School
4 Credits Offered As Demand Warrants
Instrument flight operations in detail, altitude instrument flying, air traffic control and navigation facilities, pilot responsibilities. IFR enroute charts, instrument approach procedures. Federal Aviation Regulations, flight planning, human factors and meteorology. Includes optional visits to FAA, RAPCO and ARTCC facilities. ***Prerequisites: Pilot's Certificate or enrollment in Aviation program. Proof required first day of class.*** (3+3)

AVTY F201 Instrument Pilot Training
2 Credits Offered As Demand Warrants
Flight instruction is arranged by student through approved pilot school or independent flight instructor. Cost of flight instruction varies with location of instruction. Training will be in accordance with current Federal Aviation Regulations. Course completion requires awarding of instrument rating. ***Prerequisites: Private or Commercial Pilot Certificate or AVTY F200 or concurrent enrollment or passing score on FAA Private or Commercial Pilot written exam, or permission of instructor; department approval.*** (2+0)

AVTY F202 Flight Instructor Ground School
3 Credits Offered As Demand Warrants
Preparation for the FAA certified flight instructor or advanced ground instructor written exam. ***Prerequisites: Commercial pilot certificate or permission of instructor.*** (3+0)

AVTY F203 Flight Instructor Flight Training
2 Credits Offered As Demand Warrants
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 F202; or concurrent enrollment; or passing score on FAA flight instructor written exams; department approval.*** (2+0)

AVTY F205 Instrument Instructor Flying
3 Credits Offered As Demand Warrants
Preparation for certification as an instrument flight instructor. ***Prerequisites: Commercial flight instructor certificate and department approval.*** (3+0)

AVTY F206 ATP Ground Instruction
4 Credits Offered As Demand Warrants
Preparation for the FAA airline transport pilot written exam. ***Prerequisites: Compliance with FAR 61.151 and 61.155 or department permission.*** (4+0)

AVTY F207 ATP Flying
2 Credits Offered As Demand Warrants
Qualification for single- or multi-engine FAA airline transport pilot certificate. ***Prerequisites: Commercial pilot certificate, 1500 hours of flight time as pilot or equivalent as described in FAR 61.155; AVTY F206 or passing score on FAA airline transport pilot written exam; current FAA first class medical certificate.*** (2+0)

AVTY F220 Basic Flight Physiology
3 Credits Offered As Demand Warrants
Understanding the physiology of flight and using this knowledge to explain why certain phenomena occur to the mind and body during flight. ***Prerequisites: Pilot's Certificate or enrollment in Aviation program. Proof required first day of class.*** (3+0)

AVTY F226 Flight Engineer Ground School
4 Credits Offered As Demand Warrants
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; department approval.*** (4+0)

AVTY F231 Arctic Survival
3 Credits Offered As Demand Warrants
Use of principles, procedures, techniques and equipment to survive extreme arctic conditions and assist in safe recovery. Lab required. Special fees apply. Cross-listed with EMS F257. (3+0)

AVTY F232 Aviation Astronomy and Navigation
3 Credits Offered As Demand Warrants
Air navigation and astronomy, including charts, equipment, star and constellation identification, and calculations. (3+0)

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AVTY F235 **Elements of Weather**
3 Credits Offered As Demand Warrants
Weather as it affects aircraft operators with an emphasis on interior Alaska. (3+0)

AVTY F239 **Aircraft Dispatcher**
4 Credits Offered As Demand Warrants
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. (4+0)

AVTY F402 **Aircraft Management**
3 Credits Offered As Demand Warrants
Securing, dispatching and monitoring aircraft operations. Safety, security, community relations, cost-effective scheduling and personnel management for mission scheduling. (3+0)

AVTY F405 **Advanced Aircraft Operations**
3 Credits Offered As Demand Warrants
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 F100 or AVTY F111 or AVTY F301 or permission of instructor.*** (3+0)

AVTY F410 **Techniques of Bush Flying**
2 Credits Offered As Demand Warrants
Flight training emphasizing emergency procedures in remote locations, off-airport operations, critical flight attitudes, low-level flight, terrain flying, special maneuvers and unique soft and short field takeoffs and landings. ***Prerequisites: AVTY F231; AVTY F235; AVTY F301; commercial rating; 20 hours taildragger time.*** (1+2)

BIOLOGY

BIOL F100X **Human Biology** (n)
4 Credits Offered Fall; As Demand Warrants
Introduction to scientific methodology and biological principles with a focus on humans as biological organisms. Topics include organization of the human body, human genetics, human development and the relationship between our bodies and health. Includes lecture, discussion, lab and projects. Offered through distance education. Offered at the Northwest campus as demand warrants. May not be used as biology elective credit for a major in biological sciences. Note: Intended for non-science majors and those seeking preliminary instruction before beginning study in health-related areas. Offered through Community and Technical College and Rural campuses as demand warrants. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (3+3)

BIOL F103L **Biology and Society Laboratory**
1 Credit Offered Spring
A laboratory section only of BIOL 103X designed for transfer students that are non-science majors who have completed a natural science course with no laboratory at another institution. This lab cannot be used as a biology elective by biological science majors. Special fees apply. ***Prerequisites: A natural science course with no laboratory and permission of instructor.*** (0+3)

BIOL F103X **Biology and Society** (n)
4 Credits Offered Spring; Fall at Northwest Campus
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. Special fees apply. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (3+3)

BIOL F104 **Natural History of Alaska**
3 Credits Offered Fall
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. Offered Spring and Fall via Independent Learning. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (3+0)

BIOL F104X **Natural History of Alaska** (n)
4 Credits Offered Fall
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. Special fees apply. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (3+3)

BIOL F111X **Human Anatomy and Physiology I** (n)
4 Credits Offered Fall
Integrated view of human structure and function for students in pre-professional allied health programs, biology, physical education, psychology and art. Covers cells, tissues and organs, skeletal and muscle systems, the nervous system, and integument. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor. Recommended: High school biology; High school algebra CHEM F105X-CHEM F106X or CHEM F103X-CHEM F104X.*** (3+3)

BIOL F112X **Human Anatomy and Physiology II** (n)
4 Credits Offered Spring
Integrated view of human structure and function for students in pre-professional allied health programs, biology, physical education, psychology and art. Examines circulatory, respiratory, digestive, excretory, endocrine and reproductive systems. Special fees apply. ***Prerequisites: BIOL F111X; placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor. Recommended: High school biology, high school algebra, CHEM F105X- CHEM F106X or CHEM F103X-CHEM F104X; ENGL F111X.*** (3+3)

BIOL F115X **Fundamentals of Biology I** (n)
4 Credits Offered Fall
Introduction to the principles of biology for science majors, with emphasis on chemistry of life, cell structure, metabolism, genetics and animal form and function. Students for whom this course is required for their major will be given preference when space is limited. Special fees apply. ***Prerequisites: Placement in ENGL F111X or higher; placement in MATH F107X or higher; or permission of instructor. Prerequisite/co-requisite: CHEM F105X or permission of instructor. Recommended: High school biology.*** (3+3)

BIOL F116X **Fundamentals of Biology II** (n)
4 Credits Offered Spring
Continuation of topics addressed in BIOL F115X, with emphasis on evolutionary biology, diversity of life, plant form and function and ecology. Students for whom this course is required for their major will be given preference when space is limited. Special fees apply. ***Prerequisite: BIOL F115X.*** (3+3)

BIOL F135 **The Third Kingdom: Mushrooms and other Fungi**
3 Credits Offered Fall Even-numbered Years
Introduction to fungi of the world with an emphasis on Alaska arctic, subarctic and subantarctic environs. Designed to encourage more in-depth study, but is primarily for traditionally non-science orientations. Form, function, symbiosis, taxa, social, industrial and technological applications are emphasized. (3+0)

BIOL F150 **Introduction to Marine Biology**
3 Credits
Survey of marine organisms, evolution of marine life, habitats and communities of ocean zones, productivity and marine resources. For non-science

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majors; may not be used as biology elective credit for a major in biological science. Available via Independent Learning only. (3+0)

BIOL F233 Biology of the Non-Vascular Plants
3 Credits Offered As Demand Warrants
Structure, function, comparative development, taxonomy, phylogeny and life histories of non-vascular cryptogams (blue-green algae, algae, fungi, lichens, mosses, liverworts and horn worts). Special fees apply. ***Prerequisites: BIOL F115X; BIOL F116X.*** (2+3)

BIOL F239 Introduction to Plant Biology (n)
4 Credits Offered Fall
Plant biology including plant form and function (morphology, physiology and development), ecology (including interactions with herbivores, pollinators and microbes), conservation, evolution and economic botany. Emphasis on vascular plants (particularly angiosperms) but includes comparisons with nonvascular plants. ***Prerequisites: BIOL F115X; BIOL F116X.*** (3+3)

BIOL F240 Beginnings in Microbiology
4 Credits Offered As Demand Warrants
Fundamentals of microbiology. Survey of the microbial world, interactions between microbes and host, microbial human diseases, the environmental and economic impact of microorganisms. Provides background in basic and applied microbiology with emphasis on the role microorganisms play in human health and life. Offered at Community and Technical College. Special fees apply. ***Prerequisites: One course in high school or college-level biology required, or permission of the instructor. Recommended: One course in chemistry. Note: May not be used as biology elective credit for a major in biological sciences.*** (3+3)

BIOL F261 Introduction to Cell and Molecular Biology (n)
4 Credits
An introduction to the structure and function of cells. Topics include: the structure and function of cellular components, including proteins, membranes and organelles; understanding how cells communicate; and how information is processed in the cell via DNA replication, transcription and translation. Special fees apply. ***Prerequisites: BIOL F115X; BIOL F116X; CHEM F105X; CHEM F106X or concurrent enrollment.*** Cross-listed with CHEM F261. (3+3)

BIOL F271 Principles of Ecology (n)
4 Credits
Basic principles in physiological, ecosystem, population and community ecology. Environmental factors and their influence on plants and animals. Structure, growth and regulation of populations. The ecosystem concept, biogeochemical cycles, and the structure and function of major terrestrial biomes. Special fees apply. ***Prerequisites: BIOL F115X; BIOL F116X; LS F100 or LS F101 or successful completion of library skills competency test; or permission of instructor.*** (3+3)

BIOL F277 Introduction to Conservation Biology
3 Credits Offered Spring
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 F115X, BIOL F116X.*** Cross-listed with NRM F277. (3+0)

BIOL F288 Fish and Fisheries of Alaska
3 Credits Offered Spring Even-numbered Years
This course will provide mid-level undergraduate students with an introduction to the biology and fisheries of Alaskan fish, shellfish and marine mammals with important finfishes as the main focus of the course. First, we will examine important recreational, subsistence and commercial shellfish and finfish species. Next we will briefly cover fisheries economics and then turn our attention to lesser known freshwater and marine fish species. Finally, we will conclude with a brief overview of marine mammal fisheries in Alaska. The amount of coverage of each of these topics will vary depending on what is known about each group of organisms. Before enrolling students should have a basic understanding of basic biological and ecological concepts. This course is required of all fisheries students but should appeal to anyone interested in Alaska's fish and fisheries. ***Prerequisites: BIOL 105X and BIOL 106X; FISH 101 or permission of instructor*** Cross-listed with FISH F288. (3+0)

BIOL F301 Biology of Fishes
4 Credits Offered Fall
A broad overview of the biological diversity of fishes presented from the comparative and organismal perspectives. The course examines the relationship between physical and biological properties of aquatic environments and the anatomy, physiology, behavior and geographical distribution of living fish lineages. Topics include fish evolution, biogeography, classification, gross and fine anatomy, sensory biology, and form-function relationships. Topics are presented to highlight essential concepts generally relevant in biology. ***Prerequisites: BIOL F116X or equivalent; junior or senior standing. Recommended: BIOL F317. Cross-listed with FISH F301.*** (3+3)

BIOL F303 Principles of Metabolism and Biochemistry
4 Credits Offered Fall
Introduction to metabolism at the molecular level. Topics include structure and function of proteins, allostery and feedback, biological regulation and the major pathways of carbon and nitrogen metabolism. Presented in an evolutionary and ecological context. ***Prerequisites: BIOL F115X; BIOL F116X; CHEM F105X; CHEM F106X.*** (3+3)

BIOL F305 Invertebrate Zoology (n)
4 Credits Offered Spring Even-numbered Years
Classification, structure, function, evolution and life histories of invertebrate animals. Special fees apply. ***Prerequisites: BIOL F115X; BIOL F116X; BIOL F271.*** (3+3)

BIOL F310 Animal Physiology (n)
4 Credits Offered Fall
Animal function, including respiration, digestion, circulation, nerve and muscle function, hormones and reproduction. Special fees apply. ***Prerequisites: BIOL F115X; BIOL F116X; CHEM F105X; CHEM 106X.*** (3+3)

BIOL F317 Comparative Anatomy of Vertebrates (n)
4 Credits Offered Spring
Anatomy, phylogeny and evolution of the vertebrates. Special fees apply. ***Prerequisites: BIOL F115X; BIOL F116X.*** (2+6)

BIOL F331 Systematic Botany (n)
4 Credits Offered Spring
Classification of flowering plants with emphasis on Alaskan flora; taxonomic principles, classical and experimental methods of research. Preregistration is required to ensure that each student will prepare a plant collection. Special fees apply. ***Prerequisites: BIOL F239 or permission of instructor. Recommended: BIOL F362.*** (2+6)

BIOL F334 W Structure and Function in Vascular Plants (n)
4 Credits Offered Spring Odd-numbered Years
Morphology, anatomy and physiology of vascular plants, stressing the interrelationships between development, anatomy, growth, water relations, photosynthesis, transport and metabolism. ***Prerequisites: BIOL F239; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** (3+3)

BIOL F342 Microbiology (n)
4 Credits Offered Spring
Morphology and physiology of microorganisms. The role of these organisms in the environment and their relationship to humans. Concepts of immunology. Laboratory stresses aseptic techniques for handling microorganisms. Special fees apply. ***Prerequisites: BIOL F115X; BIOL F116X; CHEM F105X.*** (3+3)

BIOL F362 Principles of Genetics (n)
4 Credits
Principles of inheritance; physiochemical properties of genetic systems. Special fees apply. ***Prerequisites: BIOL F115X; BIOL F116X; CHEM F105X; MATH F107X or higher.*** (3+3)

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BIOL F402 W **Biomedical and Research Ethics** (h)
3 Credits Offered Fall
Issues in biomedical ethics. Topics will vary but include discussion of moral principles and problems of research ethics and medical ethics, such as: animal and human experimentation; data management; informed consent; therapeutic and non-therapeutic research; physician/patient relationship; autonomy; assisted reproductive technologies; euthanasia; organ transplantation; and allocation of scarce medical resources. ***Prerequisites: ENGL F111X; either ENGL F211X or ENGL F213X; junior or senior standing; a course in philosophy, science, or nursing; permission of instructor. Recommended: A course in philosophy, science or nursing.*** Cross-listed with PHIL F402. (3+0)

BIOL F406 **Entomology** (n)
4 Credits Offered Spring Odd-numbered Years
Biology of insects and related arthropods, with emphasis on evolution, ecology, behavior, biodiversity, morphology and systematics. Lab emphasizes identification and collection. ***Prerequisites: BIOL F115X; BIOL F116X; BIOL F271; or permission of instructor.*** (3+3)

BIOL F417 O **Neurobiology**
3 Credits Offered Spring Even-numbered Years
Organization and function of the vertebrate nervous system from the subcellular to the organismal levels. Neural bases of sensations, specific behaviors and homeostasis. Applications of basic neurobiological research to pathological conditions. Examples taken mostly from the recent vertebrate literature. ***Prerequisites: BIOL F310; COMM F131X or COMM F141X; or permission of instructor.*** Stacked with BIOL F617. (3+0)

BIOL F418 **Biogeography**
3 Credits Offered Fall
This course explores the geography of life by examining linkages between climate, geomorphology, and ecological communities with emphasis on the biogeography of subarctic, polar and alpine regions. Cross-listed with GEOG F418. ***Prerequisites: BIOL F271 or NRM F277, junior/senior standing or permission of instructor.*** (3+0)

BIOL F422 **Physiological Ecology of Overwintering**
3 Credits Offered As Demand Warrants
Investigation of physiological and behavioral responses of animals and plants to winter in northern environments. Analysis of biologically relevant environmental changes that accompany winter, and comparison of alternative strategies that organisms use to cope with winter including: photoperiodism, acclimatization, arctic endurance, migration, hibernation, supercooling and freeze tolerance. Includes principles of thermoregulation, conductance and fattening. Includes field studies of overwintering of insects and amphibians. ***Prerequisites: BIOL F310 or permission of instructor.*** Stacked with BIOL F623. (2+3)

BIOL F425 **Mammalogy** (n)
3 Credits Offered Fall
Variety of mammals, their behavior, life histories, identification, phylogeny and systematics, morphology, distribution and zoogeography. ***Prerequisites: BIOL F317 or permission of instructor; junior standing or above.*** (2+3)

BIOL F426 W,O/2 **Ornithology** (n)
3 Credits Offered Spring
Evolution, anatomy, physiology, distribution, migration, breeding biology of birds, their classification and identification. ***Prerequisites: BIOL F115X; BIOL F116X; COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** (2+3)

BIOL F427 **Ichthyology** (n)
4 Credits Offered Spring
Major groups of fishes, emphasizing fishes of northwestern North America. Classification structure, evolution, general biology and importance to man. Cross-listed with FISH F427. (3+3)

BIOL F433 **Conservation Genetics**
3 Credits Offered Spring
Concepts of population genetics, phylogenetics, pedigree analysis, systematics and taxonomy as they apply to conservation of species. Evaluating the impact of small population size, population fragmentation, inbreeding, hybridization, taxonomic uncertainties and other factors on viability and management of species. ***Prerequisites: BIOL F271 or equivalent; BIOL F362 or equivalent; or permission of instructor. Recommended: BIOL F277; NRM F277.*** Cross-listed with WLF F433. Stacked with BIOL F633; WLF F633. (3+0)

BIOL F441 W,O/2 **Animal Behavior** (n)
3 Credits Offered Fall
Genetic and physiological bases of behavior, evolutionary and ecological principles of individual and social behavior, sociobiology and techniques of behavioral observation and analysis. ***Prerequisites: BIOL F271; BIOL F310; COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** (2+3)

BIOL F443 W **Microbial Ecology**
3 Credits Offered Fall Odd-numbered Years
Interactions of microorganisms with their environment, emphasizing microbial responses to the environment, microbial processes such as nutrient cycling and pollutant biodegradation, and microbial interactions with each other, plants and animals. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; BIOL F271 or BIOL F342; or permission of instructor.*** (3+0)

BIOL F445 W,O **Molecular Ecology and Evolution** (s)
3 Credits Offered Fall Odd-numbered Years
An introduction to theory and computational techniques used to analyze and interpret DNA sequence variation among populations and closely related species. Special fees apply. ***Prerequisites: BIOL F362; BIOL F481.*** Stacked with BIOL F645. (2+3)

BIOL F450 W,O **Women and Science**
3 Credits Offered Spring Odd-numbered Years
The historical contributions and participation of women in science with an emphasis on the biological sciences. Discussion of the factors affecting female participation in the sciences and how participation of women in science affects the manner in which science is concluded. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; junior standing in the natural sciences; or permission of instructor.*** (3+0)

BIOL F453 O/2 **Molecular Biology**
4 Credits Offered Fall Even-numbered Years
Provides in-depth coverage of eukaryotic and prokaryotic gene function, including the applications of recombinant DNA technology to the biological sciences. ***Prerequisites: BIOL F362 or CHEM F321 or BIOL F303; COMM F131X or COMM F141X; or permission of instructor.*** Cross-listed with CHEM F453. Stacked with BIOL F653; CHEM F653. (3+3)

BIOL F455 W,O **Environmental Toxicology**
3 Credits Offered Spring Even-numbered Years
Environmental toxicology will focus on the general properties and principles of persistent and/or poisonous (toxic) chemicals commonly encountered in air, water, fish and wildlife. Numerous natural and synthetic chemicals in the environment will be discussed from a global perspective with some bias towards arctic and subarctic regions. Special fees apply. ***Prerequisites: CHEM F451 or BIOL F303; or one semester each of organic chemistry and cell or molecular biology; or permission of instructor.*** Cross-listed with CHEM F455. (0+0)

BIOL F458 **Vertebrate Endocrinology**
3 Credits Offered Fall Odd-numbered Years
Introduction to the mechanisms of action and the roles of the main hormonal systems that operate in vertebrates. Hormone effects at the organ, tissue and (sub)cellular levels. Hormonal control of homeostasis and of specific behaviors. Examples to be taken mostly from recent comparative studies. ***Prerequisites: BIOL F310 or permission of instructor.*** Cross-listed with WLF F458. (3+0)

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BIOL F459 O/2 **Wildlife Nutrition**
4 Credits Offered Fall
The energy nutrient requirements of vertebrate animals in relation to their ecology, physiology and life history. Concepts and techniques used by wildlife biologists 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: COMM F131X or COMM F141X; BIOL F310; BIOL F271; or permission of instructor.*** Cross-listed with WLF F460. Stacked with BIOL F659; WLF F660. (3+3)

BIOL F462 O **Concepts of Infectious Disease**
3 Credits Offered Spring
Covers infectious disease biology using examples of different pathogens and exploring the concepts of their biology and the implication of these principles on pathology, epidemiology and sociology of infectious diseases. ***Prerequisites: BIOL F261 or BIOL F342; or permission of instructor.*** Stacked with BIOL F662. (3+0)

BIOL F465 **Immunology**
3 Credits Offered Spring Odd-numbered Years
Adaptive immune response including its components and activation from cells to molecules, clonal selection, antigen recognition, and discrimination between foreign and self. Concepts applied on the level of intact organisms addressing allergies, autoimmunity, transplantation, tumors and disease (AIDS). ***Prerequisites: BIOL F115X and BIOL F116X and BIOL F310; or BIOL F111X and BIOL F112X; or permission of instructor.*** (3+0)

BIOL F467 **Ecosystems of Alaska** (n)
3 Credits Offered Summer Even-numbered Years; As Demand Warrants
Focus on the application of ecological principles to field research. Emphasis on the integration of ecology with climatology, geology and hydrology to understand the functioning of ecosystems at local and regional scales. One week of intensive lecture and library research followed by 10 days of field research in the major ecosystems of Alaska. Special fees apply. ***Prerequisites: An undergraduate course in ecology, geology, hydrology or climatology and permission of instructor.*** (2+3)

BIOL F469 O **Landscape Ecology and Wildlife Habitat**
3 Credits Offered Spring
A problem-based learning and critical thinking approach to modern methods in landscape ecology, including geographic information systems, remote sensing, modeling, software and the Internet. Graduate students are expected to help undergraduates with occurring problems and questions. Special fees apply. ***Prerequisites: BIOL F271 or equivalent; COMM F131X or COMM F141X.*** Cross-listed with WLF F469. Stacked with BIOL F669; WLF F669. (2+3)

BIOL F471 **Population Ecology** (n)
3 Credits Offered Spring
Biology of populations of plants and animals, including population structure, natality, mortality, population growth, regulation of population size, population interactions in competition, herbivory, predation and parasitism. ***Prerequisites: A calculus course, BIOL F271 for biology majors; WLF F201 for wildlife majors; either course for others.*** (2+3)

BIOL F472 W **Community Ecology** (n)
3 Credits Offered Fall Even-numbered Years
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. ***Prerequisites: BIOL F271; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** (2+3)

BIOL F473 W **Limnology**
4 Credits Offered Fall
The ecology of inland waters emphasizing lakes and rivers. Lecture provides graphically oriented view of concepts. Workshops provide role-playing exercises for integrating social, economic and ecological aspects of managing freshwater systems. Laboratory involves team- based original research from proposal to manuscript. Special fees apply. ***Prerequisites: BIOL F115X; BIOL F116X; BIOL F271; CHEM F105X; CHEM F106X; ENGL F111X; ENGL F211X or F213X or permission of instructor.*** (2+3+2)

BIOL F474 **Plant Ecology** (n)
4 Credits Offered Spring Even-numbered Years
Principles and contemporary topics in plant ecology. Autoecology, community ecology, ecosystem ecology and evolutionary ecology. ***Prerequisites: BIOL F239, BIOL F271, STAT F200X.*** (3+3)

BIOL F475 **Vegetation Description and Analysis**
2 Credits Offered Fall Even-numbered Years
Methods of vegetation science including sampling, classification, gradient analysis, ordination, field description and mapping. Field trips to the plant communities of interior Alaska. Special fees apply. ***Prerequisites: BIOL F474 or other general ecology course; permission of instructor.*** (1+3)

BIOL F476 **Ecosystem Ecology**
3 Credits Offered Fall Odd-numbered Years
Focus on the biological and physical principles that govern functioning of terrestrial ecosystems. Emphasis on how plants, animals and microorganisms control the movement of water, carbon and nutrients through ecosystems. Discussion of how changes in these processes have altered global cycles of carbon, water and nutrients and sustainability of the world's ecosystems. ***Prerequisites: BIOL F271 or BIOL F239 or permission of instructor.*** (3+0)

BIOL F481 **Principles of Evolution**
4 Credits
Patterns and processes of evolutionary change are used to explore the unifying principles of the biological sciences. Basic models of population genetics, quantitative genetics, development, phylogenetics and systematics are used to build a conceptual framework for study of living systems. Special fees apply. ***Prerequisites: BIOL F271; BIOL F362; STAT F200X; junior standing; or permission of instructor. Note: STAT F200X may be taken concurrently.*** Stacked with BIOL F681. (3+3)

BIOL F483 **Stream Ecology**
3 Credits Offered Spring
The ecology of streams and rivers focusing on physical, chemical and biological processes. ***Prerequisites: BIOL F115X; BIOL F116X; BIOL F271. Recommended: CHEM F105X; CHEM F106X.*** (3+0)

BIOL F485 **Global Change Biology**
3 Credits Offered Fall Odd-numbered Years
Contemporary science and policy concerns of global change that involve biological processes. Includes structural and functional responses and sensitivities of biological processes to environmental changes (such as climate and human uses of land and biological resources); implications of biological responses to global change for conservation and management of biological resources; and the social and economic consequences of biological responses to global change. ***Prerequisites: BIOL F271; CHEM F105X; CHEM F106X.*** Cross-listed with WLF F485. (3+0)

BIOL F486 **Vertebrate Paleontology** (n)
3 Credits Offered Spring Odd-numbered Years
The study of vertebrate evolution through geologic time. Covers the temporal range, diversity and systematics of major vertebrate groups as documented in the fossil record, with an emphasis on current problems in vertebrate evolutionary pattern and process. Labs emphasize comparative morphology and identification of major vertebrate groups. ***Prerequisites: BIOL F310; or BIOL F317; or GEOS F315; or permission of instructor.*** Cross-listed with GEOS F486. Stacked with GEOS F686; BIOL F686. (2+3)

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BIOL F487 Conceptual Issues in Evolutionary Biology
3 Credits Offered Spring Odd-numbered Years
Analysis of some of the main models which explain evolutionary change, followed by consideration of the practical implications these models have on the study of biological phenomena in general. Cross-listed with PHIL F487. Stacked with BIOL F687; PHIL F687. (3+0)

BIOL F602 Research Design
3 Credits Offered Fall
An introduction to the philosophy, performance and evaluation of hypothetical/deductive research in the biological sciences, with emphasis on hypothesis formulation and testing. Each student will develop a research proposal. ***Prerequisite: Graduate standing or permission of instructor.*** Cross-listed with WLF F602. (3+0)

BIOL F604 Scientific Writing, Editing, and Revising in the Biological Sciences
3 Credits Offered Spring
For students who are ready to produce a manuscript or thesis chapter. Topics include the publishing process (e.g., the role of editors and reviewers), preparing to write (selecting a journal, authorship), the components of the scientific paper, revising and editing manuscripts, and responding to reviews. Students will produce a complete manuscript. ***Prerequisites: Graduate standing in Biology, Wildlife, or related discipline and permission of instructor. Cross-listed with WLF F604.*** (3+0)

BIOL F605 Animal Stable Isotope Ecology
3 Credits Offered Spring Odd-numbered Years
Recent primary literature in stable isotope ecology, which uses naturally occurring variation in stable isotopes of carbon, nitrogen, oxygen, hydrogen and sulphur as markers of organismal and ecological processes. The focus will be on animal studies, including diet reconstruction, mixing models, food web, metabolism, nutrient allocation and migration. ***Prerequisite: Graduate standing; or permission of instructor.*** (3+0)

BIOL F611 Fish Physiology
3 Credits Offered in Juneau, As Demand Warrants
Physiology of the living fishes. ***Prerequisites: BIOL F310 [BIOL S310-J]; BIOL F427.*** (3+0)

BIOL F613 Resilience Internship
2 Credits Offered Fall
Students of the Resilience and Adaptation Program participate in internships to broaden their interdisciplinary training, develop new research tools, and build expertise outside their home disciplines. Internships are for eight to ten weeks of full time commitment and take place during the student's first summer in the program. In the autumn students meet to discuss their internship experiences and make public presentations. ***Prerequisites: ANTH/BIOL/ECON/NRM F667; ANTH/BIOL/ECON/NRM F668; or permission of instructor.*** Cross-listed with ANTH F617; ECON F613; NRM F613. (2+0)

BIOL F614 Foraging Ecology
2 Credits Offered Fall Even-numbered Years
The dynamics of herbivory, emphasizing the foraging process, and including mechanisms of feeding, feeding behavior, habitat and plant selection, physiological influences on feeding, plant and community level responses, plant defenses against herbivory and management of plant-herbivore systems. ***Prerequisites: Graduate standing or approval of instructor.*** Cross-listed with WLF F614. (2+0)

BIOL F615 Systematic and Comparative Biology
3 Credits Offered Fall Even-numbered Years
Concepts of systematic biology basic to a rigorous and complete understanding of modern evolutionary theory. Systematics provides the historical framework critical to a variety of comparative analyses in biology. Recent innovations in phylogenetic analyses will be explored. ***Prerequisites: Graduate standing in biology or permission of instructor.*** (3+0)

BIOL F616 Ecological Background for Resilience and Adaptation
1 Credit Offered Fall
Provides the ecological background that is necessary for understanding the role of ecology in complex systems involving interactions among biological, economic, and social processes. Designed for incoming students of the Resilience and Adaptation Program (RAP), who have not received training in ecology. ***Prerequisites: Graduate student enrollment or permission of instructor.*** Cross-listed with NRM F616. (1+0)

BIOL F617 Neurobiology
3 Credits Offered Spring Even-numbered Years
Organization and function of the vertebrate nervous system from the subcellular to organismal levels. Neural bases of sensations, specific behaviors and homeostasis. Applications of basic neurobiological research to pathological conditions. Examples taken mostly from the recent vertebrate literature. ***Prerequisites: BIOL F310 and graduate standing; or permission of instructor.*** Stacked with BIOL F417. (3+0)

BIOL F618 Biogeography
3 Credits Offered Fall
This course explores the geography of life by examining linkages between climate, geomorphology, and ecological communities with emphasis on the biogeography of subarctic, polar and alpine regions. Cross-listed with GEOG F618. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

BIOL F622 Current Issues in Conservation Biology
3 Credits Offered Spring Odd-numbered Years
Critical discussion of contemporary issues concerning extinction patterns, population viability and the preservation, design and management of habitats for populations/species of concern. Stresses integration of principles and policies into strategies for biological conservation. ***Prerequisites: Graduate standing; BIOL F471 or WLF F410; or permission of instructor.*** Cross-listed with WLF F622. (3+0)

BIOL F623 Physiological Ecology of Overwintering
3 Credits Offered As Demand Warrants
Investigation of physiological and behavioral responses of animals and plants to winter in northern environments. Analysis of biologically relevant environmental changes that accompany winter, and comparison of alternative strategies that organisms use to cope with winter including: photoperiodism, acclimatization, arctic endurance, migration, hibernation, supercooling and freeze tolerance. Includes principles of thermoregulation, conductance and fattening. Includes field studies of overwintering of insects and amphibians. ***Prerequisites: BIOL F310 or permission of instructor.*** Stacked with BIOL F422. (2+3)

BIOL F629 Advanced Animal Behavior
3 Credits Offered Fall Even-numbered Years
Adaptive nature of behavior in relation to the physical, biological and social environment. Focus on mechanistic (endocrinological and molecular) approaches to studying behavior. ***Prerequisites: BIOL F441 and graduate standing; or permission of instructor.*** (3+0)

BIOL F633 Conservation Genetics
4 Credits Offered Spring
Concepts of population genetics, phylogenetics, pedigree analysis, systematics and taxonomy as they apply to conservation of species. Evaluating the impact of small population size, population fragmentation, inbreeding, hybridization, taxonomic uncertainties and other factors on viability and management of species. ***Prerequisites: BIOL F271 and BIOL F362 or equivalent or permission of instructor. Recommended: BIOL F277; NRM F277.*** Cross-listed with WLF F633. Stacked with BIOL F433; WLF F433. (3+3)

BIOL F644 Advanced Topics in Evolution
3 Credits Offered Spring
Modern theory and subdisciplinary directions in the expanding field of evolutionary biology. Topics include adaptation, speciation, reinforcement,

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comparative method, group selection, phylogeography, advanced systematics, geographic variation and the role of evolutionary biology in society. May be repeated for credit when content varies. ***Prerequisites: Undergraduate course in evolution or permission of instructor.*** (3+0)

BIOL F645 W,O **Molecular Ecology and Evolution** (s)
3 Credits Offered Fall Odd-numbered Years
An introduction to theory and computational techniques used to analyze and interpret DNA sequence variation among populations and closely related species. Special fees apply. ***Prerequisites: BIOL F362; BIOL F481; graduate standing or permission of instructor.*** Stacked with BIOL F445. (2+3)

BIOL F647 **Global to Local Sustainability**
3 Credits Offered Fall
Explores basic principles that govern resilience and change of ecological and social systems. Principles are applied across a range of scales from local communities to the globe. Working within and across each of these scales, students address the processes that influence ecological, cultural and economic sustainability, with an emphasis on northern examples. ***Prerequisites: Graduate standing in a natural science, social science, humanities, or interdisciplinary program at UAF; and permission of instructor.*** Cross-listed with ANTH F647; ECON F647; NRM F647. (3+0)

BIOL F649 **Integrated Assessment and Adaptive Management**
3 Credits Offered Spring
Interdisciplinary exploration of the theoretical and practical considerations of integrated assessment and adaptive management. Students survey concepts important in understanding societal and professional-level decision-making. Students work as individuals and as a team to undertake case studies with relevance to integrated assessment and adaptive management. The class builds a portfolio of cases and conducts an integrated assessment. Note: In case of enrollment limit, priority will be given to graduate students in the Resilience and Adaptation Program in order for them to be able to meet their core requirements. ***Prerequisites: Graduate student standing in a natural science, social science, humanities or interdisciplinary program at UAF or another university; or permission of instructor. The course is designed to fit into the sequence of Resilience and Adaptation Program's core courses. It is open to other graduate students interested in and prepared to conduct interdisciplinary studies relating to sustainability. Recommended: ANTH/BIOL/ECON/NRM F647; ANTH/BIOL/ECON/NRM F667. In case of enrollment limits, priority will be given to graduate students in the Resilience and Adaptation program in order for them to be able to meet their core requirement.*** Cross-listed with ANTH F649; ECON F649; NRM F649. (3+0)

BIOL F650 **Fish Ecology**
3 Credits Offered Fall Odd-numbered Years
The ecology of fish is examined from the community aspect. Current literature on inter- and intraspecific relationships, influence of the environment on community structure, behavior and production is emphasized. ***Prerequisites: BIOL F473 [BIOL S423-J]; FISH F400.*** Cross-listed with FISH F650. (2+3)

BIOL F653 **Molecular Biology**
4 Credits Offered Fall Odd-numbered Years
In-depth coverage of eukaryotic and prokaryotic gene function, including the applications of recombinant DNA technology to the biological sciences. ***Prerequisites: Graduate standing; BIOL F303 or BIOL F362 or CHEM F321; or permission of instructor.*** Cross-listed with CHEM F653. Stacked with BIOL F453; CHEM F453. (3+3)

BIOL F656 **Environmental Toxicology**
3 Credits Offered Spring Even-numbered Years
Environmental toxicology will focus on the general properties and principles of persistent and/or poisonous (toxic) chemicals commonly encountered in air, water, fish and wildlife. Numerous natural and synthetic chemicals in the environment will be discussed from a global perspective with some bias towards arctic and subarctic regions. Special fees apply. ***Prerequisites: CHEM F451; BIOL F303; or one semester each of organic chemistry and cell or molecular biology or permission of instructor.*** Cross-listed with BIOL F655. Stacked with BIOL F455; CHEM F455. (3+0)

BIOL F659 **Wildlife Nutrition**
4 Credits Offered Fall
The energy nutrient requirements of vertebrate animals in relation to their ecology, physiology and life history. Concepts and techniques used by wildlife biologists 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. Special fees apply. ***Prerequisites: BIOL F310; BIOL F271; graduate standing; or permission of instructor.*** Cross-listed with WLF F660. Stacked with BIOL F459; WLF F460. (3+3)

BIOL F662 **Concepts of Infectious Disease**
3 Credits Offered Spring
Covers infectious disease biology using examples of different pathogens and exploring the concepts of their biology and the implication of these principles on pathology, epidemiology and sociology of infectious diseases. ***Prerequisites: Graduate standing; BIOL F261 or BIOL F342; or permission of instructor.*** Stacked with BIOL F462. (3+0)

BIOL F665 **Aquatic Entomology**
2 Credits Offered Fall
Aquatic invertebrate taxonomy, mostly to the family level, and ecology. Includes field trips to learn collecting techniques and habitats. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor; Students must be able to safely wade in streams and wetlands.*** Cross-listed with FISH F665. (1+3)

BIOL F667 **Resilience Seminar I**
1 Credit Offered Fall
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research that are relevant to sustainability. A considerable portion of the seminar is student-directed, with students assuming leadership in planning seminar activities with the instructor. Graded Pass/Fail. ***Prerequisites: Student must be enrolled in Resilience and Adaptation graduate program or permission of instructor. Recommended: ANTH/BIOL/ECON/NRM F647 (taken concurrently).*** Cross-listed with ANTH F667; ECON F667; NRM F667. (2+0)

BIOL F668 **Resilience Seminar II**
1 Credit Offered Spring
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research that are relevant to sustainability. The seminar provides support to each student planning his/her summer internship and preparing and presenting a thesis research prospectus. Graded Pass/Fail. ***Prerequisites: ANTH/BIOL/ECON/NRM F647; ANTH/BIOL/ECON/NRM F667; or permission of instructor.*** Cross-listed with ANTH F668; ECON F668; NRM F668. (2+0)

BIOL F669 **Landscape Ecology and Wildlife Habitat**
3 Credits Offered Spring
A problem based learning and critical thinking approach to modern methods in landscape ecology, including geographic information systems, remote sensing, modeling, software and the Internet. Graduate students are expected to help undergraduates with occurring problems and questions. Special fees apply. ***Prerequisites: Graduate standing.*** Cross-listed with WLF F669. Stacked with BIOL F469; WLF F469. (2+3)

BIOL F672 **Ecosystem Processes**
3 Credits Offered Fall Odd-numbered Years
A comparative approach to the structural and functional components of terrestrial ecosystems, emphasizing primary and secondary production and the dynamics of nutrient cycling processes. Interactions between producers, consumers and decomposition processes, and effects on the efficiencies of nutrient and energy transfers. ***Prerequisites: Graduate standing or permission of instructor.*** (2+2)

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BIOL F675 Plant Physiological Ecology
3 Credits Offered Fall Even-numbered Years
Physiological ecology of dormancy, germination, growth, photosynthesis, water relations and nutrition with an emphasis on northern and other stressful environments; relationship to community and ecosystem processes. ***Prerequisites: Graduate standing; BIOL F239; BIOL F334; BIOL F474; or permission of instructor.*** Cross-listed with ECON F675. (2+3)

BIOL F676 Interdisciplinary Modeling of High Latitude Global Change
4 Credits Offered Fall Even-numbered Years
Introduces students to approaches to modeling how regional and global environmental change influences biological and social systems in high latitudes and how the responses of these systems influence the regional and global functioning of the earth system. ***Prerequisites: STAT F200X or equivalent; graduate standing; or permission of instructor.*** Cross-listed with NRM F676. (3+3)

BIOL F677 Advanced Topics in Plant Ecology and Systematics
3 Credits Offered Spring
One of four topics is covered each year: 1) Current issues and concepts in plant population and community ecology. 2) Reproductive ecology — pollination, seed dispersal, breeding systems and coevolution. 3) Plant families of the world. 4) Plant-animal interactions — evolution and ecology. Note: May be repeated for credit when topic differs. ***Prerequisites: BIOL F474; graduate standing; or permission of instructor.*** (3+0)

BIOL F679 Cellular and Molecular Neuroscience
3 Credits Offered Fall
This 3 credit course is team-taught by neuroscience faculty in Chemistry and Biology. The course goal is to provide a comprehensive overview of the molecular and cellular aspects of the adult and developing nervous system in vertebrates, particularly humans. Topics addressed will include neuroanatomy, electrophysiology and synaptic transmission, cellular neuroscience, neuropharmacology, and neurodevelopment. ***Prerequisites: Two F300-level courses in BIOL or CHEM or PSY F345 or permission of instructor.*** Cross-listed with CHEM F470; CHEM F670. (3+0)

BIOL F680 Data Analysis in Biology
3 Credits Offered Fall Even-numbered Years
Biological applications of nonparametric statistics, including tests based on binomial and Poisson distributions, analysis of two-way and multiway contingency tables, and tests based on ranks; multivariate statistics, including principal component analysis, ordination techniques, cluster analysis, and discriminate analysis; and time-series analysis. Introduction to the use of the computer and use of statistical packages. Each student will analyze a data set appropriate to the student's research interests. ***Prerequisites: STAT F200X; STAT F401; either graduate standing in a biologically oriented field; or permission of instructor.*** Cross-listed with WLF F680. (2+3)

BIOL F681 Principles of Evolution
4 Credits
Patterns and processes of evolutionary change are used to explore the unifying principles of the biological sciences. Basic models of population genetics, quantitative genetics, development, phylogenetics and systematics are used to build a conceptual framework for study of living systems. Special fees apply. ***Prerequisites: Graduate standing with courses in genetics, ecology and statistics; or permission of instructor.*** Stacked with BIOL F481. (3+3)

BIOL F686 Vertebrate Paleontology
3 Credits Offered Spring Odd-numbered Years
The study of vertebrate evolution through geologic time. Covers the temporal range, diversity and systematics of major vertebrate groups as documented in the fossil record, with an emphasis on current problems in vertebrate evolutionary pattern and process. Labs emphasize comparative morphology and identification of major vertebrate groups. ***Prerequisites: BIOL F310; or BIOL F317; or GEOS F315; or permission of instructor.*** Cross-listed with BIOL F486; GEOS F486. Stacked with GEOS F686. (2+3)

BIOL F687 Conceptual Issues in Evolutionary Biology
3 Credits Offered Spring Odd-numbered Years
Analysis of some of the main models which explain evolutionary change followed by consideration of the practical implications these models have on the study of biological phenomena in general. Cross-listed with PHIL F687. Stacked with BIOL F487; PHIL F487. (3+0)

BUSINESS ADMINISTRATION

Students enrolling in School of Management courses are expected to have completed the necessary prerequisites for each course.

A per semester student computing facility user fee will be assessed for student enrolling in one or more Management courses (AIS, ACCT, BA and ECON) except ECON F100X. This fee is in addition to any materials fees.

BA F151 Introduction to Business (s)
3 Credits
Business organization, nature of major business functions such as management, finance, accounting, marketing, personnel administration. Opportunities and requirements for professional business careers. Also available via Independent Learning. (3+0)

BA F241 Advertising, Sales and Promotion
3 Credits Offered Fall or Spring
Advertising, publicity, sales management, sales promotion, direct marketing and the interrelationships necessary for effective promotions in domestic or international, small or large, goods or services, and for-profit or nonprofit organizations. (3+0)

BA F253 Internship in Business
1-3 Credits
Supervised work experience in an approved position related to the student's career interests or objectives. Number of credits depends on type of position and time worked. No student can count more than eight internship credits towards a degree. ***Prerequisites: Approval of program or department head.*** (1-3+1-3)

BA F254 Personal Finance
3 Credits
Emphasis on personal investments and financial management. (3+0)

BA F280 Sports Leadership
3 Credits Offered As Demand Warrants
Provides leadership theory and develop leadership skills for application internal and external to their sport. Focus on the identification and development of leadership skills/abilities and application within the classroom, a sport and for an on-campus project. (3+0)

BA F281 Sports Management
3 Credits Offered As Demand Warrants
Provides a basic understanding of managing amateur and professional sports organizations and the legal issues involved. Topics such as stadium financing, risk management contracts and human resource management, public versus private sector labor laws, collective bargaining and drug testing will be examined. ***Prerequisites: Sophomore standing.*** (3+0)

BA F305 Leadership Alaska: Making a Difference (s)
4 Credits Offered Spring
A leadership seminar and practicum which will involve building community, developing networks, learning leadership theories, understanding civic responsibility, and creating an action project through which the student becomes a leader. ***Prerequisites: Either be an Alaska Scholar; an Honors student; a member of the National Society of Collegiate Scholars; have a 3.25 GPA; or permission of instructor.*** (4+0)

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BA F307 Introductory Human Resources Management
3 Credits
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. Also available via Independent Learning. (3+0)

BA F317 W Employment Law
3 Credits Offered Fall or Spring
Basic personnel and human resource management law, including labor law and current management practices in administering collective bargaining agreements. Emphasis on the major federal and Alaska state laws affecting personnel management. ***Prerequisites: BA F307 or concurrent enrollment; ENGL F111X; ENGL F211X or ENGL F213X.*** (3+0)

BA F323X Business Ethics (h)
3 Credits Offered Fall, Spring, Summer; As Demand Warrants
A grounding in ethical theories and basic issues of moral thought, with examples which highlight the pitfalls in practical ethics which future managers are likely to face, and the need to design organizations so as to promote ethical behavior. (3+0)

BA F325 Financial Management
3 Credits Offered Fall or Spring
Time value of money, bond and stock valuation, capital budgeting, risk-return trade-offs and option pricing. ***Prerequisites: ACCT F261; ECON F200; MATH F262X; STAT F200X.*** (3+0)

BA F330 The Legal Environment of Business
4 Credits
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. Also available via Independent Learning. (4+0)

BA F343 Principles of Marketing
3 Credits
Management of a firm's marketing effort focusing on products, distribution, pricing and promotion to targeted consumers. Practices appropriate to domestic or international, small or large, goods or services, and for-profit or nonprofit organizations included. Also available via Independent Learning. (3+0)

BA F360 Operations Management
3 Credits
Operations management with an emphasis on systematic planning, design and operation of the processes that produce goods and deliver services that customers recognize to be of superior quality. Topics include operations strategy, process design, quality control, statistical process control, project scheduling, material requirements planning and just-in-time systems. ***Prerequisites: AIS F101; STAT F200X.*** (3+0)

BA F390 Organizational Theory and Behavior
3 Credits
Understanding how and why organizations behave as they do, assessing whether the behavior is functional or dysfunctional, and learning to understand and change motivation, leadership, communications, group dynamics, conflict management, layout, technology, structure and policies to create high-functioning organizations. (3+0)

BA F423 W Investment Analysis
3 Credits Offered Spring
Introduction to investment analysis. Presents an understanding of the investment environment and analytical tools in investing. Intended for undergraduate students. ***Prerequisites: BA F325; ENGL F111X; ENGL F211X or ENGL F213X.*** (3+0)

BA F424 Real Estate and Alternative Investments
3 Credits Offered Spring
Develop skills required to value and finance residential and commercial real estate. Financing instruments, markets and taxation issues specific to real estate are covered in the first half; alternative investments such as REITs will be presented in the second half of the course. ***Prerequisites: BA F325.*** (3+0)

BA F436 Consumer Behavior (s)
3 Credits Offered Fall or Spring
Effects of nationality, culture, social class, family, personality, symbolism and persuasion on consumptive behavior. Qualitative methodologies such as focus groups covered. ***Prerequisites: BA F343 or PSY/SOC F330.*** (3+0)

BA F445 W Marketing Research
3 Credits Offered Fall or Spring
Basic processes and tools of marketing research with emphasis on utilization of research findings as an integral part of the managerial decision-making process. Techniques of qualitative and quantitative data-gathering and analysis to solve a marketing problem. Practices appropriate to domestic or international, small or large, goods or services, and for-profit or nonprofit organizations. ***Prerequisites: BA F343; ECON F227; ENGL F111X; ENGL F211X or ENGL F213X; upper division B.B.A. standing; or permission of the SOM advisor.*** (3+0)

BA F447 W,O Compensation Management
3 Credits Offered Fall or Spring
Theory and practice of wage and salary, benefits and risk management. Planning, administration, auditing, adjusting and budgeting for compensation and risk. ***Prerequisites: BA F307; COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X.*** (3+0)

BA F452 W Internship in Emergency Management
3 Credits Offered As Demand Warrants
A supervised practical work experience to enable students to apply their course work in a fire department or closely related field of emergency services. Admission dependent upon approved sponsorship arrangements. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; B.E.M. degree major; upper division standing; permission of instructor. Recommended: Four semesters of bachelor core; business administration courses.*** (0+6)

BA F453 Internship in Business Administration
1-3 Credits Offered As Demand Warrants
A supervised practical work experience to enable students to apply their coursework in a business environment. Admission dependent upon approved sponsorship arrangements. Repeated for a maximum of six credits. ***Prerequisites: Accumulative 3.0 GPA in ACCT and BA courses.*** (0+2-9)

BA F454 O Student Investment Fund
3 Credits
Hands-on experience in portfolio management. Students will be making investment and diversification decisions affecting the $500,000 Student Investment Fund. ***Prerequisites: COMM F131X or COMM F141X; BA F325 or equivalent; upper division B.B.A. standing; permission of the SOM advisor or instructor.*** (3+0)

BA F455 Portfolio Management
3 Credits
The second course involved with the hands-on management of the $500,000 Student Investment Fund. Students will carry out the duties of officers of the fund and will be responsible for portfolio diversification and management decisions affecting the fund. ***Prerequisites: BA F454; upper division B.B.A. standing; permission of the SOM advisor or instructor.*** (3+0)

BA F456 W Small Business Management
3 Credits Offered Fall or Spring
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,

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tax regulations and employee supervision. ***Prerequisites: ACCT F261; ACCT F262; ENGL F111X; ENGL F211X or ENGL F213X.*** (3+0)

BA F457 **Training and Management Development**
3 Credits Offered Fall or Spring
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 F307.*** (3+0)

BA F460 O **International Business**
3 Credits Offered Fall or Spring
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: COMM F131X or COMM F141X. Recommended: Senior standing.*** (3+0)

BA F461 **International Finance**
3 Credits Offered Fall or Spring
Development of analytical skills, logical thought processes and information literacy necessary to make and implement investment decisions in a global setting. ***Prerequisites: BA F325.*** (3+0)

BA F462 O **Corporate Strategy**
3 Credits
An integrative approach to strategy formation and implementation to achieve organization goals. Students will be introduced to theoretical perspectives and associated methodologies directed toward resolving the unstructured problems and opportunities which confront general managers at the highest levels of an organization. ***Prerequisites: COMM F131X or COMM F141X; ACCT F262; BA F325; BA F343; BA F360; BA F390; ECON F321 or ECON F322 or ECON F324 or ECON F350; upper division B.B.A. standing; or permission of the SOM advisor. ACCT F352 or ACCT F342.*** (3+0)

BA F467 **Current Topics in Management**
3 Credits Offered Fall or Spring
Examines current management trends with regard to major theories and practices in the field. Topics of interest could include organizational development, performance appraisal, personnel selection and international human resources management. ***Prerequisites: BA 307; BA 390.*** (3+0)

BA F490 **Services Marketing**
3 Credits Offered Fall or Spring
Marketing principles in the service sector with special emphasis on such service industries as banking, healthcare, recreation, retailing and tourism. Includes practices appropriate to domestic or international, small or large, and for-profit organizations. ***Prerequisites: BA F343.*** (3+0)

BA F491 **Current Topics in Marketing**
3 Credits Offered Fall or Spring
Examines current marketing trends with regard to production, distribution, promotion, pricing and target markets. Focus on trends in Alaska, the U.S. and worldwide. ***Prerequisites: BA F343.*** (3+0)

BA F607 **Human Resources Management**
3 Credits Offered Fall or Spring, As Demand Warrants
The study of the effective management of human resources in organizations to include employee planning and recruiting, selection and orientation, training and career development, performance evaluation, compensation, EEO, occupational safety and health, and labor relations. ***Prerequisites: Graduate standing or permission of M.B.A. director.*** (3+0)

BA F617 **Organizational Theory for Managers**
3 Credits Offered Fall or Spring
Overview of the history, concepts, literature and applications in organizational theory. Emphasis on applications and cases applying organizational theory concepts to management. ***Prerequisites: Graduate standing or permission of M.B.A. director.*** (3+0)

BA F620 **Portfolio Theory and Asset Pricing**
3 Credits Offered As Demand Warrants
Examination of modern normative portfolio theory and asset pricing. Includes mathematics of portfolio analysis, single-period risk and return measures, and the process of optimal portfolio selection. ***Prerequisites: M.B.A. standing.*** (3+0)

BA F630 **Derivative Securities**
3 Credits Offered As Demand Warrants
Derivative securities including options strategies, binomial and Black-Scholes pricing models, commodity and interest-rate futures, hedging strategies using options and futures, and risk management. ***Prerequisites: M.B.A. standing.*** (3+0)

BA F643 **Marketing Management**
3 Credits Offered Fall or Spring
Provides managerial approach to examining processes for identifying prospective opportunities, as well as review of marketing mix elements relating to planning, developing and implementing marketing plans. Topics include market segmentation, buyer behavior, product policy and strategy, pricing, promotion and sales force management, distribution channel policy, competitive behavior, market research and marketing ethics. ***Prerequisites: Graduate standing or permission of M.B.A. director.*** (3+0)

BA F652 **Fundamentals of Business**
3 Credits Offered Fall
Introduction to business and management. Class sessions will be used to overview all functional business disciplines and to discuss the disciplines in relation to one another. ***Graduate standing; or permission of M.B.A. Director.*** (3+0)

BA F675 **Quantitative Methods for Managers**
3 Credits Offered Fall or Spring
An in-depth treatment of quantitative research methods in an applied context. The usefulness of those techniques to the managerial decision-making process. Research skills are presented as a set of tools that enable managers to make better decisions. ***Prerequisites: STAT F200X or equivalent and graduate standing; or permission of M.B.A. director.*** (3+0)

BA F680 **Financial Markets and Strategy**
3 Credits Offered Fall or Spring
Description of capital markets, development of the major financial theories that explain how to value financial instruments, and examination of how these theories can be used by corporations to evaluate real investments. How firms choose among the various instruments available to them for financing operations and how these instruments help firms manage risks. These corporate financial decisions are viewed as part of the overall corporate strategy of firms, affecting investment and operating strategies, product market strategies, and the ways in which executives are compensated. ***Prerequisites: ACCT F602; graduate standing; or permission of M.B.A. director.*** (3+0)

BA F681 **Fixed Income Securities and Markets**
3 Credits Offered Fall or Spring, As Demand Warrants
Fixed income securities and markets including treasury, agency, mortgage-backed and corporate securities, municipal bonds and derivatives. Introduces technical issues relating to duration, convexity and bond-portfolio management. ***Prerequisites: M.B.A. standing.*** (3+0)

BA F682 **Financial Statement Analysis**
3 Credits Offered Fall or Spring, As Demand Warrants
How to comprehend and critically evaluate financial statements. Building on topics introduced in a first-year course in financial accounting, analyze additional disclosures typically included in financial statements. These activities will be useful in tasks related to valuation, credit decisions, competitor assessment and bankruptcy predictions. ***Prerequisites: M.B.A. standing.*** (3+0)

BA F683 **Advanced Topics in Marketing**
3 Credits Offered Fall or Spring, As Demand Warrants
Current topics and issues in marketing management, such as political and services marketing, marketing communications, marketing in Alaska or other

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relevant subjects. Note: May be taken twice for credit when topic changes. ***Prerequisites: M.B.A. standing.*** (3+0)

BA F690 **Corporate Strategy**
3 Credits Offered Fall or Spring
An integrative approach to strategy formation and implementation (decision-making) to achieve organization goals. Students will be introduced to theoretical perspectives and associated methodologies directed toward resolving the unstructured problems and opportunities which confront general managers at the highest levels of an organization. BA F690 is an advanced seminar taken during the student's last spring semester. ***Prerequisites: M.B.A. standing.*** (3+0)

BA F691 **Advanced Topics in Business**
3 Credits Offered Fall or Spring, As Demand Warrants
Developing managers' ability to excel in specialized areas of business such as entrepreneurship and risk management. May be taken twice for credit when topic changes. Note: May be taken twice for credit when topic changes. ***Prerequisites: M.B.A. standing.*** (3+0)

CHEMISTRY

A per semester fee for computer facilities will be assessed for one or more CHEM courses at the F200-level and above. This fee is in addition to any lab/materials fees.

CHEM F100X **Chemistry in Complex Systems** (n)
4 Credits
Fundamentals of chemistry with an emphasis on the role of chemistry in environmental and life systems. The role of feedback systems on chemical behavior is illustrated in atmospheric, aquatic, nuclear and nutritional systems. For non-science majors. Special fees apply. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (3+3)

CHEM F103X **Basic General Chemistry** (n)
4 Credits Offered Fall
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 F105X. Note: This course satisfies elective credit only. Special fees apply. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (3+3)

CHEM F104X **A Survey of Organic Chemistry and Biochemistry** (n)
4 Credits Offered Spring
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 F105X. Special fees apply. ***Prerequisites: CHEM F103X; placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (3+3)

CHEM F105X **General Chemistry I** (n)
4 Credits
CHEM F105X-F106X, together, constitute the standard one-year engineering and science-major general chemistry course with laboratory. Major subjects include measurements, calculations, atomic and molecular structure, gas laws, stoichiometry, an introduction to organic chemistry, chemical reactions and related energy changes. Special fees apply. ***Prerequisites: Placement in ENGL F111X or higher; placement in MATH F107X or higher; or a B or better in CHEM F103X; or permission of instructor and department chair. Co-requisite: CHEM F105L. Students must be enrolled in both CHEM F105X and CHEM F105L to receive full credit.*** (3+3)

CHEM F106X **General Chemistry II** (n)
4 Credits
Major subjects include reaction kinetics, equilibrium (including acids and bases, solubility and complex ion formation), nuclear chemistry, electrochemistry, and descriptive chemistry of the elements. Special fees apply. ***Prerequisites: C Grade or better in CHEM F105X; placement in ENGL F111X or higher; placement in MATH F107X or higher; or permission of instructor and department chair. Co-requisite: CHEM F106L. Students must be enrolled in both CHEM F106X and CHEM F106L to receive full credit.*** (3+3)

CHEM F190 **Alaska Statewide High School Science Symposium**
2 Credits Offered Spring
Students employ the scientific method to approach a problem of personal interest. Student work is molded into a research paper delivered orally in a formal scientific presentation for judges with wide-ranging experiences. Graded Pass/Fail. Special fees apply. ***Prerequisites: High School student grades 9-12. Recommended: Research completion, abstract and paper writing/submission, ASHSSS presentation.*** (0+10)

CHEM F202 **Basic Inorganic Chemistry** (n)
3 Credits Offered Spring
Lecture includes brief review of general chemistry, atomic structure, covalent bonds, molecular structure, nuclear chemistry, group theory and molecular symmetry. Lab involves the synthesis of known and novel inorganic complexes using a glovebox and Schlenk/vacuum line techniques, and characterization of the complexes by nuclear magnetic resonance, infrared, ultraviolet-visible absorption and mass spectroscopies. Furthermore, cyclic voltammetry, HyperChem calculations, and SciFinder Scholar are used and students give oral presentations describing lab projects at the end of the year. Special fees apply. ***Prerequisites: CHEM F106X.*** (2+3)

CHEM F212 **Chemical Equilibrium and Analysis** (n)
4 Credits Offered Fall
Aqueous chemical equilibrium as applied to chemical analysis, separations, spectrophotometry, potentiometry and factors considered in the analytical approach. Lab portion will include introductory experiments in analytical and instrumental techniques. Special fees apply. ***Prerequisites: Grade of C or better in CHEM F106X; MATH F107X or equivalent.*** (3+3)

CHEM F261 **Introduction to Cell and Molecular Biology** (n)
4 Credits
An introduction to the structure and function of cells. Topics include: the structure and function of cellular components, including proteins, membranes and organelles; understanding how cells communicate; and how information is processed in the cell via DNA replication, transcription and translation. Special fees apply. ***Prerequisites: BIOL F115X; BIOL F116X; CHEM F105X; CHEM F106X.*** Cross-listed with BIOL F261. (3+3)

CHEM F313 **Chemical Analysis of Dynamic Systems** (n)
2 Credits Offered Fall
Introduction to modern methods of chemical analysis for the solution of specific environmental or biochemical problems. Focus on planning efficient experiments, assuring reliable results and specific operations done in the lab. Laboratory experiments are multi-week projects requiring bench chemistry and instrumental methods. Collaborative groups are used in the laboratory and in writing laboratory reports. Special fees apply. ***Co-requisite: CHEM F212 or junior standing.*** (1+4)

CHEM F321 **Organic Chemistry I**
3 Credits Offered Fall
A systematic study of the more important functional groups of carbon compounds, including their mechanisms of reaction, methods of synthesis, and physical and spectroscopic properties. ***Prerequisites: CHEM F106X or permission of instructor.*** (3+0)

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CHEM F322 Organic Chemistry II
3 Credits Offered Spring
A systematic study of the more important functional groups of carbon compounds, including their mechanisms of reaction, methods of synthesis and physical and spectroscopic properties. ***Prerequisites: CHEM F321 or permission of instructor.*** (3+0)

CHEM F323 Organic Chemistry Laboratory
3 Credits Offered Spring
A laboratory designed to illustrate modern techniques of isolation, purification, analysis and structure determination of covalent, principally organic, compounds. Intended for health science majors; chemistry majors must take CHEM F324W instead. ***Co-requisite: CHEM F322*** (1+6)

CHEM F324 W Advanced Organic Chemistry Laboratory (n)
4 Credits Offered Spring
A laboratory designed to illustrate modern techniques of isolation, purification, analysis and structure determination of covalent, principally organic, compounds. Emphasis on research techniques including 2D nuclear magnetic resonance spectroscopy. Intended for chemistry majors. Special fees apply. ***Prerequisites: ENGL 211X or ENGL F213X; CHEM F212 or permission of instructor. Co-requisites: CHEM F322.*** (2+6)

CHEM F331 Physical Chemistry I
4 Credits Offered Fall
Principles of thermodynamics and kinetics with applications to phase equilibria, solutions, chemical equilibrium and electrochemistry. Course teaches these concepts using both lecture and laboratory instruction. Special fees apply. ***Prerequisites: CHEM F106X; MATH F202X; PHYS F104X or PHYS F212X; or permission of instructor.*** (3+3)

CHEM F332 Physical Chemistry II
4 Credits Offered Spring
Atomic and molecular structure, and spectroscopy, and statistical mechanics. Course teaches these concepts using both lecture and laboratory instruction. ***Prerequisites: CHEM F331 or permission of instructor.*** (3+3)

CHEM F402 Inorganic Chemistry
3 Credits Offered Fall
Symmetry and group theory, molecular orbital theory, solid state chemistry, acids and bases, redox reactions, non-aqueous solvents, descriptive chemistry of some main group elements. ***Prerequisites: CHEM F202; CHEM F322; CHEM F332.*** (1+6)

CHEM F406 Atmospheric Chemistry
3 Credits Offered Spring Odd-numbered Years
Chemistry of the lower atmosphere (troposphere and stratosphere) including photochemistry, kinetics, thermodynamics, box modeling, biogeochemical cycles and measurement techniques for atmospheric pollutants; study of important impacts to the atmosphere which result from anthropogenic emissions of pollutants, including acid rain, the "greenhouse" effect, urban smog and stratospheric ozone depletion. ***Prerequisites: CHEM F332 or equivalent or permission of instructor.*** Stacked with CHEM F606; ATM F606. (3+0)

CHEM F413 W Analytical Instrumental Laboratory (n)
3 Credits Offered Spring
A laboratory course focusing on the acquisition and interpretation of chromatographic and spectroscopic data for quantitative chemical measurements. Students will learn effective experimental planning and execution, critical evaluation of experimental data and written communication in the context of the chemical sciences. Special fees apply. ***Prerequisites: CHEM F212; ENGL F111X; ENGL F211X or ENGL F213X; Co-requisite: CHEM F332; Chemistry major or permission of instructor.*** (3+0)

CHEM F418 W Developmental Biology (n)
4 Credits Offered Spring Even-numbered Years
Morphological and molecular aspects of the development of multicellular organisms, with emphasis on the regulation of morphogenesis. Laboratory involves team-based research focusing on fundamental aspects of vertebrate embryo development. ***Prerequisites: BIOL F115X; BIOL F116X; BIOL F310; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** Cross-listed with BIOL F418. (3+3)

CHEM F420 NMR Spectroscopy of Natural Products
3 Credits Offered Spring Odd-numbered Years
Use of nuclear magnetic resonance (NMR) spectroscopy for the interpretation of the structure of organic molecules. Both one- and two-dimensional techniques will be covered. Theory will be introduced but most of the course will be structural elucidation by NMR. Includes training and use of the Varian Mercury NMR instrument. ***Prerequisites: CHEM F321; CHEM F322.*** Stacked with CHEM F620. (3+0)

CHEM F434 W Instrumental Methods in Physical Chemistry (n)
3 Credits Offered Fall
A modern laboratory course with three major components: 1) experiments related to concepts learned in CHEM F331 and CHEM F332 including, but not limited to, spectroscopy, conductance, and diffusion; 2) computer use in problem solving, data analysis and word processing; and 3) technical writing with emphasis on preparation of papers for publication. Special fees apply. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor. Co-requisites: CHEM F332.*** (1+6)

CHEM F445 Molecular Evolution
4 Credits Offered Fall Odd-numbered Years
The study of structure, function and evolution of hereditary molecules (nucleic acids). Special fees apply. ***Prerequisites: BIOL F362.*** Stacked with CHEM F645. (3+3)

CHEM F450 General Biochemistry — Macromolecules
3 Credits Offered Fall
Focuses on the biochemistry of the two principal macromolecules: nucleic acids and proteins. Topics include: nucleotides metabolism, DNA structure and topology, DNA replication, DNA repair and recombination, cell cycle regulation, RNA transcription and processing. Gene expression, translation and protein metabolism. Biomedical relevance and contemporary techniques will be addressed if appropriate. ***Prerequisites: CHEM F322 or permission of instructor.*** (3+0)

CHEM F451 General Biochemistry — Metabolism
3 Credits Offered Spring
The biochemistry of metabolism. Topics include: chemistry of amino acids and its implication, protein structure-function, enzyme catalysis, glucose and glycogen metabolism and regulation, bioenergetics, lipid metabolism and biomembranes, amino acid metabolism and regulation of metabolism. Biomedical relevance and contemporary techniques will be addressed if appropriate. ***Prerequisites: CHEM F322; or permission of instructor. Recommended: CHEM F331.*** (3+0)

CHEM F453 O/2 Molecular Biology
4 Credits Offered Fall Odd-numbered Years
Provides in-depth coverage of eukaryotic and prokaryotic gene function, including the applications of recombinant DNA technology to the biological sciences. ***Prerequisites: BIOL F362 or CHEM F321 or BIOL F303; COMM F131X or COMM F141X; or permission of instructor.*** Cross-listed with BIOL F453. Stacked with CHEM F653; BIOL F653. (3+3)

CHEM F455 W,O Environmental Toxicology
3 Credits Offered Spring Even-numbered Years
Environmental toxicology will focus on the general properties and principles of persistent and/or poisonous (toxic) chemicals commonly encountered in air, water, fish and wildlife. Numerous natural and synthetic chemicals in the environment will be discussed from a global perspective with some bias towards arctic and subarctic regions. Special fees apply. Cross-listed with BIOL F455. (0+0)

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CHEM F470 Cellular and Molecular Neuroscience
3 Credits Offered Fall
This 3 credit course is team-taught by neuroscience faculty in Chemistry and Biology. The course goal is to provide a comprehensive overview of the molecular and cellular aspects of the adult and developing nervous system in vertebrates, particularly humans. Topics addressed will include neuroanatomy, electrophysiology and synaptic transmission, cellular neuroscience, neuropharmacology, and neurodevelopment. ***Prerequisites: Two F300-level courses in BIOL or CHEM or PSY 345; or permission of instructor.*** Stacked with CHEM F670. Cross-listed with BIOL F679. (3+0)

CHEM F472 Systems Neuroscience
3 Credits Offered Spring
This 3 credit course is given in collaboration with the University of Montana and Montana State University. The course goal is to provide a comprehensive overview into the architecture and function of various neurological systems in the mammalian central nervous system, particularly in humans. Topics addressed will include but are not limited to the visual system, the auditory system, the limbic system, pain, neuropathologies, and CNS injuries. Each topic will address known and suspected pathologies and include discussions with clinicians from the St. Patrick Hospital and Health Sciences Center in Missoula, MT. This course will be taught using Access Grid Node technology, an audio/video internet broadcasting system. ***Prerequisites: Two F300-level courses in Biology/Chemistry, or Psychology/Philosophy; or permission of instructor.*** Stacked with CHEM F672. (3+0)

CHEM F474 Neurochemistry
3 Credits Offered Spring Even-numbered Years
Covers basic and applied aspects of interneuronal signaling of specific neurotransmitter systems. Lectures will be based on chapters from assigned text as well as recent and historical literature relevant to these topics. Basic concepts introduced in lectures will be applied through guided discussion of original research papers. Students will learn to prepare "peer reviews" of selected papers and critically discuss original research. ***Prerequisites: BIOL F115X; CHEM F322; BIOL F417O or CHEM F470 or PSY F335.*** (3+0)

CHEM F481 Seminar
1 Credit
Introduction to the techniques and style of technical oral presentation generally accepted by professional chemists. Class will meet two hours per week, the first hour in closed session, the second, open to the public. Seminar attendance and participation in observing and critiquing presentations by graduate students, chemistry faculty, and their peers is required. Note: Oral communication intensive credit is earned upon successful completion of CHEM F482. Graded Pass/Fail. ***Prerequisites: COMM F131X or COMM F141X.*** (2+0)

CHEM F482 O Seminar
2 Credits
Introduction to the techniques and style of technical oral presentation generally accepted by professional chemists. Class will meet two hours per week, the first hour in closed session, the second, open to the public. Preparation of a 40 minute presentation to be delivered twice, first, to others in the course in the closed session for critiquing and suggestions for improvement and later, in the open seminar for evaluation by all. ***Prerequisites: CHEM F481; COMM F131X or COMM F141X.*** (2+0)

CHEM F488 Undergraduate Chemistry and Biochemistry Research
2-3 Credits
Advanced research topics from outside the usual undergraduate laboratory offerings. The student will be required to make presentations and turn in a final report. Research areas range from atmospheric chemistry to molecular biology. A substantial level of chemistry or biochemistry background is assumed. Special fees apply. (0+6-9)

CHEM F601 Introduction to Atmospheric Science
3 Credits Offered Fall
Fundamentals of atmospheric science. Includes energy and mass conservation, internal energy and entropy, atmospheric water vapor, cloud microphysics, equations of motion, hydrostatics, phase oxidation, heterogeneous chemistry, the ozone layer, fundamentals of biogeochemical cycles, solar and terrestrial radiation and radiative-convective equilibrium. Also includes molecular, cloud and aerosol absorption and scattering. ***Prerequisites: Graduate standing.*** Cross-listed with ATM F601. Stacked with ATM F401. (3+0)

CHEM F602 Advanced Inorganic Chemistry
3 Credits Offered Spring Odd-numbered Years
Symmetry and group theory, molecular orbital theory, descriptive chemistry of some main group elements and the transition metals, coordination chemistry and crystal field theory, kinetics and mechanisms, organometallic chemistry, bioinorganic chemistry. ***Prerequisites: CHEM F402.*** (3+0)

CHEM F605 Aquatic Chemistry
3 Credits Offered Fall Even-numbered Years
Chemistry of aquatic systems, including the development of equilibrium and kinetic models to understanding the speciation, transformation and partitioning of inorganic chemical species in natural and engineered water systems. Emphasis is on the study of acid-base chemistry, complexation, precipitation-dissolution and reduction-oxidation reactions. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with ENVE F641. (3+0)

CHEM F606 Atmospheric Chemistry
3 Credits Offered Spring Odd-numbered Years
Chemistry of the lower atmosphere (troposphere and stratosphere) including photochemistry, kinetics, thermodynamics, box modeling, biogeochemical cycles and measurement techniques for atmospheric pollutants; study of important impacts to the atmosphere which result from anthropogenic emissions of pollutants, including acid rain, the "greenhouse" effect, urban smog and stratospheric ozone depletion. ***Prerequisites/Co-requisite: ATM F601 or permission of instructor.*** Cross-listed with ATM F606. Stacked with CHEM F406. (3+0)

CHEM F609 Environmental Geochemistry
3 Credits Offered Spring Even-numbered Years
Focus on advanced topics and methods in chemistry of aquatic and soil environments. Detailed treatment of the thermodynamic, kinetic and structural principles involved in the description and modeling of low-temperature aqueous geochemical systems. Particular emphasis on heterogeneous interactions, including dissolution/precipitation, sorption and microbial processes, involved in the partitioning, transformation and transport of chemical species in the environment. ***Prerequisites: ENVE F641 or GEOS F618 or permission of instructor.*** Cross-listed with GEOS F633. (3+0)

CHEM F612 Advanced Analytical Chemistry: Chemometrics
3 Credits Offered Spring Odd-numbered Years
Strategies and methods used by analytical chemists to maximize the chemical information content of data obtained in chemical measurements (i.e. chemometrics). Methods include univariate and multivariate approaches. Topics include the design of experiments, sampling, instrumental calibration and prediction, robust statistical methods, data preprocessing and pattern recognition. Emphasis on examples in optical spectroscopy, field analytical chemistry and iterative investigations. ***Prerequisites: CHEM F332; CHEM F412; or permission of instructor.*** (3+0)

CHEM F618 Crystallography and Diffraction
3 Credits Offered Fall Odd-numbered Years
The structure of solid-state materials and the analysis of materials using X-ray scattering techniques. Material structure topics will include crystal lattices, space-group symmetry, projections, the reciprocal lattice, and crystal chemistry. Methods for investigating the structure of materials and identification of phase will be covered in depth including: fundamentals of X-ray scattering, diffraction from single crystals, powder diffraction (quantitative) phase analysis, Rietveld refinements, texture analysis, and reflectivity. Students will be trained

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in the use of modern X-ray disciplines including materials chemistry, mineralogy, petrology, and engineering materials with an emphasis on methods of data collection and analysis. Special fees apply. ***Prerequisite: Graduate standing or permission of the instructor.*** (3+2)

CHEM F620 NMR Spectroscopy of Natural Products
3 Credits Offered Spring Odd-numbered Years
Use of nuclear magnetic resonance (NMR) spectroscopy for the interpretation of the structure of organic molecules. Both one- and two-dimensional techniques will be covered. Theory will be introduced but most of the course will be structural elucidation by NMR. Includes training and use of the Varian Mercury NMR instrument. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with CHEM F420. (3+0)

CHEM F621 Enzymology and Bio-Organic Chemistry
3 Credits Offered Spring Even-numbered Years
Applications of the methods and concepts of physical organic chemistry to enzyme-catalyzed reactions. ***Prerequisites: CHEM F451.*** (3+0)

CHEM F622 Biosynthesis of Plant Natural Products
3 Credits Offered Fall Even-numbered Years
Three major pathways of plant secondary metabolism: terpene, shikimate and acetogenic pathways. Includes discussion of offshoots of these pathways to various classes of alkaloids. Use of stable and radioisotopes in conjunction with modern NMR spectroscopy and kinetic isotope effects will be stressed. ***Prerequisites: CHEM F322.*** (3+0)

CHEM F623 Molecular Modeling
3 Credits Offered Spring Even-numbered Years
Theory and practice of quantum and molecular mechanics methods in organic, physical, inorganic and environmental chemistry and biochemistry; applications of computational software on workstations and multi-processor servers. ***Prerequisites: Graduate standing in chemistry of biochemistry, one year each of undergraduate organic, physical and analytical chemistry or equivalent or permission of instructor. Recommended: CHEM F402.*** (2+0+3)

CHEM F631 Environmental Fate and Transport
3 Credits Offered Spring Even-numbered Years
Examination of the physical properties that govern the behavior, fate and transport of contaminants released into the environment. Topics include air-water partitioning and exchange, organic solvent-water partitioning, diffusion, sorption, chemical and biological transformation reactions, and modeling concepts. Cross-listed with ATM F631. (3+0)

CHEM F632 Molecular Spectroscopy
3 Credits Offered Fall Odd-numbered Years
Application of quantum mechanics to molecular bonding and spectroscopy. Topics include: applications of lasers to probe chemical reactivity, photochemistry and the detection of trace compounds in mixtures. Variable content. May be repeated for credit. ***Prerequisites: CHEM F332 or permission of instructor.*** (3+0)

CHEM F645 Molecular Evolution
4 Credits Offered Fall Odd-Numbered Years
Structure, function and evolution of hereditary molecules (nucleic acids). Special fees apply. ***Prerequisites: BIOL F362 or permission of instructor.*** Stacked with CHEM F445. (3+3)

CHEM F653 Molecular Biology
4 Credits Offered Fall Odd-numbered Years
In-depth coverage of eukaryotic and prokaryotic gene function, including the applications of recombinant DNA technology to the biological sciences. ***Prerequisites: BIOL F362 or CHEM F321 or BIOL F303, or permission of instructor.*** Cross-listed with BIOL F653. Stacked with CHEM F453; BIOL F453. (3+3)

CHEM F654 Protein Structure and Function
3 Credits Offered Fall Odd-numbered Years
Contemporary topics in peptide and protein biochemistry. Topics include peptide synthesis, protein modification, comparative aspects of structure, protein engineering, enzyme and receptor function as well as molecular modeling. ***Prerequisites: CHEM F451.*** (3+0)

CHEM F655 Environmental Toxicology
3 Credits Offered Spring Even-numbered Years
Environmental toxicology will focus on the general properties and principles of persistent and/or poisonous (toxic) chemicals commonly encountered in air, water, fish and wildlife. Numerous natural and synthetic chemicals in the environment will be discussed from a global perspective with some bias towards arctic and subarctic regions. Special fees apply. ***Prerequisites: CHEM F451; BIOL F303; or one semester each of organic chemistry and cell or molecular biology or permission of instructor.*** Cross-listed with BIOL F655. Stacked with BIOL F455; CHEM F455. (3+0)

CHEM F657 Molecular Foundations of Gene Expression
3 Credits Offered Fall Even-numbered Years
The molecular regulation of gene expression in prokaryotes and eukaryotes in the context of development and disease. Major topics include: protein/DNA interactions, structure-function relations of transcription factors, signal transduction, control of transcription and translation, chromatin structure and DNA replication. ***Prerequisites: CHEM F451; CHEM F456; CHEM F461 or equivalent; or permission of instructor.*** (3+0)

CHEM F658 Current Techniques in Biochemistry
3 Credits Offered Spring Even-numbered Years
Focuses on current techniques in biochemistry. This is a laboratory intensive course covering: Restriction Enzymes, polymerase chain reaction (PCR), DNA electrophoresis, Enzyme Linked Immunosorbent Assays (ELISA), DNA recombination and cloning, protein purification by affinity chromatography, protein electrophoresis, Western blots, enzyme kinetics, protein quantification by spectrophotometry, and basic tissue culture techniques. It is an important goal of this graduate course to emphasize experimental design, evaluation, and trouble shooting within each of the biochemical techniques and also to challenge students to develop their own experimental designs, evaluate the scope and limitations of the design/technique, and propose solutions for potential problems. Special fees apply. ***Prerequisite: CHEM F450; CHEM F451; graduate standing; or permission of the instructor.*** (1+6)

CHEM F660 Chemical Oceanography
3 Credits Offered Spring
An integrated study of the chemical, biological and physical processes that determine the distribution of chemical variables in the sea. The distribution of stable and radioisotopes are used to follow complex chemical cycles, with particular emphasis on the cycles of nutrient elements. The chemistry of carbon is considered in detail. Implications of the mid-ocean ridge vent system to ocean chemistry are examined. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with MSL F660. (3+0)

CHEM F670 Cellular and Molecular Neuroscience
3 Credits Offered Fall
This 3 credit course is team-taught by neuroscience faculty in Chemistry and Biology. The course goal is to provide a comprehensive overview of the molecular and cellular aspects of the adult and developing nervous system in vertebrates, particularly humans. Topics addressed will include neuroanatomy, electrophysiology and synaptic transmission, cellular neuroscience, neuropharmacology, and neurodevelopment. ***Prerequisites: Two F300-level courses in BIOL or CHEM or PSY F345 or permission of instructor.*** Stacked with CHEM F470. Cross-listed with BIOL F679. (3+0)

CHEM F672 Systems Neuroscience
3 Credits Offered Spring
This 3 credit course is taught in collaboration with the University of Montana and Montana State University. A comprehensive overview into the architecture and function of various neurological systems in the mammalian central

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nervous system, particularly in humans. Topics will include but are not limited to the visual system, the auditory system, the limbic system, pain, neuropathologies and CNS injuries. Each topic will address known and suspected pathologies and include discussions with clinicians from the St. Patrick Hospital and Health Sciences Center in Missoula, MT. The course will be taught using Access Grid Node technology, an audio/video internet broadcasting system. ***Prerequisites: Two F300-level courses in BIOL/CHEM or PSY/PHIL or graduate standing or permission of instructor.*** Stacked with CHEM F472. (3+0)

CHEM F674 **Membrane Biochemistry and Biophysics**
3 Credits Offered Fall Odd-numbered Years
Basic biophysical and molecular processes associated with membrane-mediated events in the context of cellular physiology. Major topics includes biochemical and biophysical characteristics of membrane lipids; structure-function relation of membrane proteins; protein trafficking/targeting; vesicle transport and membrane fusion/exocytosis; the nature of membrane excitability; and the role of membrane in bioenergetics. ***Prerequisites: CHEM F451; CHEM F456; CHEM F461 or equivalent, or permission of instructor.*** (3+0)

CHEM F688 **Biochemical and Molecular Biology Seminar**
0-1 Credit
A seminar on various topics related to biochemistry and molecular biology including discussions of recent literature and research results. (1+0)

CHEM F691 **Research Presentation Techniques**
1 Credit Offered Spring
Review of recent research in chemistry to expose students to recent findings, methodologies and concepts in a broad range of chemistry and related disciplines. How to present and defend research proposals. Course may be repeated for credit. ***Prerequisites: Graduate standing in physical sciences or permission of instructor.*** (1+0)

CHEM F692 **Seminar**
1 Credit
(1+0)

CHINESE

CHNS F101 **Elementary Chinese I** (h)
5 Credits Offered Fall Odd-numbered Years
First year spoken and written Chinese. Emphasis on the basic elements of the language to acquire skills in listening, speaking, reading and writing. About 300 characters will be taught. Cultural aspects will be presented. (5+0)

CHNS F102 **Elementary Chinese II** (h)
5 Credits Offered Spring Even-numbered Years
First year spoken and written Chinese. Emphasis on the basic elements of the language to acquire skills in listening, speaking, reading and writing. Approximately 300 characters will be taught. Cultural aspects are presented. ***Prerequisites: CHIN F101 or equivalent.*** (5+0)

CHNS F201 **Intermediate Chinese I** (h)
4 Credits Offered Fall Even-numbered Years
Continuation of CHNS F102. Continue to gain language skills by learning more characters/vocabulary and broadened sentence patterns. About 200 characters and 700 vocabulary words will be taught. ***Prerequisites: CHNS F102 or equivalent.*** (4+0)

CHNS F202 **Intermediate Chinese II** (h)
4 Credits Offered Spring Odd-numbered Years
Continuation of CHNS F102. Continue to gain language skills by learning more characters/vocabulary and broadened sentence patterns. About 200 characters and 700 vocabulary words will be taught. ***Prerequisites: CHNS F201 or equivalent.*** (4+0)

CIVIL ENGINEERING

A per semester fee for computing facility user fee is assessed for CEM engineering courses. This fee is in addition to any lab/materials fee.

CE F112 **Elementary Surveying**
3 Credits Offered Spring
Basic plane surveying; use of transit, level, theodolite and total station. Traverses, public land system, circular curves, cross-sectioning and earthwork. Special fees apply. ***Prerequisites: MATH F108.*** (2+3)

CE F302 **Introduction to Transportation Engineering**
3 Credits Offered Fall
Introduction to multimodal transportation systems and the factors that influence the planning, design and operation of the systems. ***Prerequisites: CE junior standing or permission of instructor.*** (3+0)

CE F326 **Introduction to Geotechnical Engineering**
4 Credits Offered Spring
Fundamentals of geotechnical engineering including identification and classification of soil, physical and mechanical properties of soil, subsurface exploration, laboratory testing techniques, seepage, compaction, stresses in soil, soil consolidation, and drained and undrained shear strength of soil. Special fees apply. ***Prerequisites: ES F331; GE F261.*** (3+3)

CE F331 **Structural Analysis**
3 Credits Offered Spring
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. Special fees apply. ***Prerequisites: ES F209; ES F331.*** (2+3)

CE F334 **Properties of Materials**
3 Credits Offered Fall
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. Special fees apply. ***Co-requisite: ES F331.*** (2+3)

CE F341 **Environmental Engineering**
4 Credits Offered Spring
Fundamentals of environmental engineering including theory and application of water and wastewater, solid waste and air quality engineering practice; natural processes that influence pollutant fate and use of these processes in engineered systems for pollution control. ***Prerequisites: CHEM F106X; ES F341; or graduate standing.*** (3+3)

CE F344 **Water Resources Engineering**
3 Credits Offered Fall
Fundamentals of engineering hydrology and hydraulic engineering. Water cycle and water balance, precipitation, evaporation, runoff, statistical methods, flood control, open channels and groundwater. Special fees apply. ***Prerequisites: ES F341.*** (3+0)

CE F400 **FE Exam**
0 Credits
Complete the FE application and take the State of Alaska Fundamentals of Engineering Exam in the same semester of course enrollment. Graded Pass/Fail. ***Prerequisites: Senior standing in civil engineering.*** (0+0)

CE F405 **Highway Engineering**
3 Credits Offered Fall
Design of geometric elements of streets and highways with emphasis on safety and efficiency. Roadway functional classification, design controls, vertical and horizontal alignments, cross sections, interchanges and intersections. ***Co-requisite: CE F302 or permission of instructor.*** (2+3)

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CE F406 Traffic Engineering
3 Credits Offered Spring
Operation and control of transportation systems with emphasis on traffic on highways and streets. Traffic control devices, data collection, capacity and level of service analysis, intersection signalization, traffic impact analysis, accident analysis and other safety considerations. ***Prerequisites: CE F405 or permission of instructor.*** (2+3)

CE F415 Advanced Surveying
3 Credits Offered Fall
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). Special fees apply. ***Prerequisites: CE F112.*** (2+3)

CE F416 Boundary Surveying
1 Credit Offered As Demand Warrants
Surveying problems related to land subdivision with emphasis on the legal aspects. Metes and bounds descriptions and platted subdivisions. ***Prerequisites: CE F112 or permission of instructor.*** (1+0)

CE F422 Foundation Engineering
3 Credits Offered Fall
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. An introduction to slope stability analysis. ***Prerequisites: CE F326; ES F301.*** (3+0)

CE F423 Introduction to Earthquake Engineering
3 Credits Offered Spring Even-numbered Years
Introduction to sources of earthquakes; source mechanism and source parameters; attenuation relationships; earthquake response of single and multi-degree of freedom systems; earthquake response spectra and earthquake-induced liquefaction and densification of soil. ***Prerequisites: CE F326.*** (3+0)

CE F424 Introduction to Permafrost Engineering
3 Credits Offered Spring Odd-numbered Years
Introduction to permafrost and frozen ground engineering, types of permafrost and ways of its formations, factors important for permafrost existence, hazards related to permafrost, index, thermal, and mechanical properties of frozen and thawing soils, methods of thermal analysis of soil freezing and thawing, foundations design alternatives, pipelines, roads and airfields in the permafrost region. ***Prerequisites: CE F326; or permission of instructor. Recommended: CE F422; GE F384.*** (3+0)

CE F425 Advanced Soil Mechanics
3 Credits Offered As Demand Warrants
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. Special fees apply. ***Prerequisites: CE F326; ES F301.*** (2+3)

CE F432 Steel Design
3 Credits Offered Fall
Design philosophies and current practice related to steel design are covered. Describes how the understanding modes of failure are used to design structural members with an appropriate factor of safety to satisfy strength and serviceability (performance). Tension members, fasteners, welds, column buckling, beam behavior and beam-columns will be discussed. The current AISC specifications are used. Special fees apply. ***Prerequisites: CE F331; ES F331.*** (2+3)

CE F433 Reinforced Concrete Design
3 Credits Offered Fall
Behavior of reinforced concrete members. Design philosophies and current practices. Flexural members, to include: rectangular, T-beams and one-way slabs. Crack control, anchorage, development lengths and deflections. Axially loaded members. Laboratory experiments. Current ACI 318 Code used. Special fees apply. ***Prerequisites: CE F331; ES F331.*** (2+3)

CE F434 Timber Design
3 Credits Offered As Demand Warrants
Design loads. Building systems and loading path. Physical and mechanical properties of wood. Design values and adjustment factors. Design of axial members, beams and columns. Connection details. Design of wood frame structures. Current National Design Specifications (NDS) for Wood Construction used. Special fees apply. ***Prerequisites: CE F331; ES F331.*** (2+3)

CE F435 Design and Construction of Bridges
3 Credits Offered Spring
Design-build technology for bridge structures is introduced. A bridge system is developed for a given crossing with predetermined specifications. Alternate designs are developed. These alternatives are based on design calculations, prepared drawings and suitability. Design ideas are developed and tested to verify if the idea meets the design assumptions. Techniques in design, fabrication, fund raising, project management, fiscal responsibility, safety, public speaking and teamwork are learned and used during the semester. The final structure will be load tested and graded based on meeting the goals of the specification. ***Prerequisites: Permission of instructor. Recommended: CE F432.*** (1+6)

CE F438 W,O Design of Engineered Systems
3 Credits Offered Spring
System design principles for large-scale constructed facilities. Application of ethics, liability and legal principles to professional practice. Emphasis on teamwork and leadership. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; CE F405 or CE F422 or CE F432 or CE F433 or CE F434 or CE F442 or CE F445; last year of civil engineering B.S. program.*** (3+0)

CE F442 Environmental Engineering Design
3 Credits Offered Fall
Design of pollution control and remediation systems. Theories and principles for the design of engineering systems for environmental protection, management and control. Water and wastewater treatment and solid waste management. Special fees apply. ***Prerequisites: CE F341.*** (3+0)

CE F445 Hydrologic Analysis and Design
3 Credits Offered Spring
Design and analysis; extended coverage of hydrologic concepts from CE F344. Precipitation, snow cover and evaporation analysis; groundwater hydraulics; runoff analysis and prediction; statistical hydrology; application of simulation models. Design of structures such as culverts, reservoirs, wells, pumps and pipe networks. ***Prerequisites: CE F344.*** (2+3)

CE F451 Construction Cost Estimating and Bid Preparation
3 Credits Offered Fall
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. ***Recommended: College math.*** (3+0)

CE F470 Civil Engineering Internship
1 Credit
Supervised work experience in engineering organizations. Assignments individually arranged with cooperating organizations and agencies. Course may be repeated three times. Each repeat must be for a different type of project. As part of the requirements for earning credit, the student must have a letter of release of information from the company, prepare a written report and make an oral presentation. Program must be approved in advance by the department. ***Prerequisites: Upper division standing; permission of department coordinator.*** (0+3)

CE F490 Civil Engineering Seminar
0.5 Credit Offered Fall
CE 490-491, together, constitute the standard one-year engineering seminar. The class is designed to provide the student with exposure to the latest information available from researchers and practicing professionals in industry. Graded Pass/Fail. ***Prerequisites: Junior/senior standing.*** (0.5+0)

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CE F491 **Civil Engineering Seminar**
0.5 Credit Offered Spring
CE 490-491, together, constitute the standard one-year engineering seminar. The class is designed to provide the student with exposure to the latest information available from researchers and practicing professionals in industry. Graded Pass/Fail. ***Prerequisites: Junior/senior standing.*** (0.5+0)

CE F603 **Arctic Engineering**
3 Credits
Application of engineering fundamentals to problems of advancing civilization to polar regions. Logistics, foundations on frozen ground and ice thermal aspects of structures, materials, transport and communications, and heating and ventilating. Special fees apply. ***Recommended: Senior standing or B.S. degree in engineering; or permission of instructor.*** (3+0)

CE F605 **Pavement Design**
3 Credits Offered Spring Odd-numbered Years
Current design techniques for flexible and rigid pavements. Materials characterization, loading considerations, empirical design methods, mechanistic design methods and rehabilitation. ***Recommended: CE F402; graduate standing; or permission of instructor.*** (3+0)

CE F617 **Control Surveys**
3 Credits Offered As Demand Warrants
Geodetic surveying, where the shape of the earth must be considered. Forward and inverse geodetic problems. Medium to long electronic distance measurements. Heavy emphasis on Alaska State Plane Coordinate System (NAD 83) and UTM Coordinate System. Adjustment of level nets. ***Prerequisites: CE F415 or other surveying experience acceptable to instructor.*** (3+0)

CE F620 **Construction Project Management**
3 Credits Offered Fall Even-numbered Years
Construction equipment, methods, planning and scheduling, construction contracts, management and accounting, construction estimates, costs, and project control. ***Recommended: ESM F450 or equivalent.*** (3+0)

CE F622 **Foundations and Retaining Structures**
3 Credits Offered As Demand Warrants
Advanced study of shallow and deep foundations; analyses and design of retaining walls, free-standing sheet-pile walls, braced excavations, slurry walls, tied-back retention systems, reinforced earth, frozen soil walls, anchored bulkheads, and cellular cofferdams. ***Prerequisites: CE F422 or permission of instructor.*** (3+0)

CE F625 **Soil Stabilization and Embankment Design**
3 Credits Offered Fall Even-numbered Years
Soil and site improvement using deep and shallow compaction, additives, preloading, vertical and horizontal drains, electro-osmosis and soil reinforcement, dewatering and stabilization; embankment design, earth pressure theories and pressure in embankment, embankment stability, embankment construction, control and instrumentation. ***Prerequisites: CE F422 or permission of instructor.*** (3+0)

CE F626 **Thermal Geotechnics**
3 Credits Offered As Demand Warrants
Fundamentals of thermal regimes of soils and rocks. Thermal impact of structures on soils. Thawing of permafrost beneath roads, buildings and around pipelines. Natural and artificial freezing of soils. Engineering means to maintain thermal regime of soils. Thermal design considerations. ***Prerequisites: CE F326; CE F422; CE F425; or permission of instructor.*** Cross-listed with GE F626. (3+0)

CE F627 **Geotechnical Earthquake Engineering**
3 Credits Offered Spring Odd-numbered Years
Introduction to soil dynamics and geotechnical aspects of earthquakes; influences of soils on ground motion, determination of soil response under strong seismic motion, causes of soil failures, soil liquefaction, lateral spreading, the seismic response of earth structures, and seismic-deformation procedures for slopes. ***Prerequisites: CE F326 or permission of instructor.*** (3+0)

CE F628 **Unsaturated Soils Mechanics**
3 Credits Offered As Demand Warrants
Fundamentals of soil behavior under load; pore pressure during monotonic loading; Ladd's "Simple Clay" model; densification and drained cyclic loading of sand; undrained cycle loading of soil. ***Prerequisites: CE F326.*** (3+0)

CE F630 **Advanced Structural Mechanics**
3 Credits Offered As Demand Warrants
Shear and torsion, nonsymmetrical bending, shear center, curved beams, introduction to composite material mechanics, application in bridge engineering. ***Prerequisites: Math F302; ES F331. Recommended: Graduate standing in engineering.*** (3+0)

CE F631 **Advanced Structural Analysis**
3 Credits Offered Spring Odd-numbered Years
Derivation of the basic equations governing linear structural systems. Application of stiffness and flexibility methods to trusses and frames. Solution techniques utilizing digital computers. Planar structures and space structures (trusses and frames) will be covered. Both exact and approximate solution techniques will be reviewed. ***Prerequisites: CE F331 or permission of instructor.*** (3+0)

CE F633 **Theory of Elastic Stability**
3 Credits Offered Spring Odd-numbered Years
The theory and implementation of the buckling of slender elements will be covered. Both lateral and local buckling concepts will be discussed. Emphasis will be placed on developing the ability to evaluate if a member is likely to buckle. The course will cover elastic and inelastic buckling of columns. Other topics include lateral torsional buckling of beams, potential buckling of beam-columns and rigid frame members and the buckling of non standard shapes. ***Prerequisites: CE F331; CE F432; MATH F302.*** (3+0)

CE F634 **Structural Dynamics**
3 Credits Offered As Demand Warrants
This course covers the theory of structural dynamics. Subjects include equations of motion for un-damped single and multiple degree of freedom systems. Free vibration and response to harmonic and periodic excitations will be studied. Response to arbitrary, step and pulse type excitations are studied in preparation for a study of earthquake type loading. The basic concepts related to the interaction of a structure to an earthquake event will be discussed. ***Prerequisites: ES F210; CE F331; MATH F302.*** (3+0)

CE F635 **Numerical Methods for Geo-Mechanics and Soil-Structure Interaction**
3 Credits Offered As Demand Warrants
Applications of numerical methods for problems involving seepage, consolidation, foundation on expansive soils and pile installation. Finite difference and element methods, non-linear analysis techniques, elasto-plastic formulation with a tangent stiffness approach, seepage analysis, flow-deformation, coupled analysis, models for soil-structure interaction, solution accuracy and reliability. ***Prerequisites: CE F326; graduate standing; or permission of instructor. Recommended: MATH F302.*** (3+0)

CE F637 **Earthquakes: Seismic Response of Structures**
3 Credits Offered As Demand Warrants
Fundamentals of structural earthquake engineering: strong ground motion phenomena; dynamic analysis of structural systems for seismic motion; response spectrum and time history methods, design of structural systems for lateral forces; shearwalls and diaphragms; moment-resistive frames, braced frames; current design criteria and practice; connection details, serviceability requirement; story drift, non-structural building elements; soil-structure interaction. ***Prerequisites: ES F210 or permission of instructor.*** (3+0)

CE F640 **Prestressed Concrete**
3 Credits Offered As Demand Warrants
Theory and practice of prestressed concrete design. Pre-tensioning and post-tensioning. Anchorage of steel. Materials, design specifications. Application in bridges, tanks and slabs. ***Prerequisites: CE F331; CE F433. Recommended: Graduate standing.*** (3+0)

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CE F646 **Structural Composites**
3 Credits Offered As Demand Warrants
The basics of structural composite theory. Basic design procedures related to structural composite members and the structural analysis of members made of various materials to create laminates or sandwich panels will be covered. ***Prerequisites: ES F331; CE F331 or permission of instructor.*** (3+0)

CE F650 **Bridge Engineering**
3 Credits Offered As Demand Warrants
Covers structural systems, loading and analysis by influence lines. Slab and girder bridges considering composite design, prestressed and concrete bridges and how these bridges are designed and rated using AASHTO specifications. ***Prerequisites: CE F432; CE F433; or permission of instructor.*** (3+0)

CE F661 **Advanced Water Resources Engineering**
3 Credits Offered Spring Odd-numbered Years
Engineering hydraulics and hydrology including use of standard computer models to solve water resource engineering problems. Saint Venant shallow water equations. Introduction to perturbation method. ***Recommended: Permission of instructor.*** (3+0)

CE F662 **Open Channel and River Engineering**
3 Credits Offered Spring Even-numbered Years
Principles of open channel flow, specific energy, hydraulic jump, transitions and controls, uniform and non-uniform flows, steady and unsteady flows, numerical solution for unsteady flows. River engineering, stream channel mechanics, and mechanics of sedimentation. ***Recommended: Permission of instructor.*** (3+0)

CE F663 **Groundwater Dynamics**
3 Credits Offered Fall Even-numbered Years
Fundamentals of geohydrology, hydraulics of flow through porous media, well hydraulics, groundwater pollution, and groundwater resources development. ***Recommended: Permission of instructor.*** (3+0)

CE F664 **Sediment Transport**
3 Credits Offered Spring Even-numbered Years
Fundamentals of sediment transport processes in rivers, oceans and reservoirs. Bed-load and suspended-load transports. Mechanics of turbidity currents. Reservoir sedimentation. Numerical modeling. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

CE F676 **Coastal Engineering**
3 Credits Offered As Demand Warrants
Review of deep and shallow water waves, littoral drift, coastal structures, pollution problems and harbor seiches. ***Prerequisites: ES F341.*** (3+0)

CE F681 **Frozen Ground Engineering**
3 Credits Offered Fall Odd-numbered Years
Nature of frozen ground, thermal properties of frozen soils, classification, physical and mechanical properties of frozen soils, subsurface investigation of frozen ground, thaw settlement and thaw consolidation, slope stability and principles of foundation design in frozen ground. ***Prerequisites: Training or experience in soil mechanics.*** (3+0)

CE F682 **Ice Engineering**
3 Credits Offered Spring Odd-numbered Years
The factors governing design of marine structures, which must contend with the presence of ice. Topics include ice growth, ice structure, mechanical properties and their dependence on temperature and structure, creep and fracture, mechanics of ice sheets, forces on structures, and experimental methods. ***Prerequisites: ES F331, MATH F202X, training or experience in soil mechanics.*** (3+0)

CE F683 **Arctic Hydrology and Hydraulic Engineering**
3 Credits Offered Fall Odd-numbered Years
Aspects of hydrology and hydraulics unique to engineering problems of the north. Although the emphasis will be on Alaskan conditions, information from Canada and other circumpolar countries will be included in the course. ***Prerequisites: CE F344 or equivalent.*** (3+0)

CE F684 **Arctic Utility Distribution**
3 Credits Offered Spring Even-numbered Years
Practices and considerations of utility distribution in Arctic regions. Emphasis on proper design to include freeze protection, materials, energy conservation and system selection. ***Prerequisites: ES F341 or permission of instructor.*** (3+0)

CE F685 **Topics in Frozen Ground Engineering**
3 Credits Offered As Demand Warrants
Selected frozen ground foundation engineering problems will be explored in depth including refrigerated foundations and pile foundations. ***Prerequisites: CE F681.*** (3+0)

COMMUNICATION

Note: Due to enrollment pressures, it is the Department of Communication policy to drop students from the class roll who fail to attend either of the first two meetings of a basic course (COMM F131X and COMM F141X) even if they have preregistered. Prerequisite for all F600-level communication courses is admission to the M.A. degree Professional Communication program or permission of instructor.

COMM F131X **Fundamentals of Oral Communication: Group Context**
3 Credits
Presentational speaking skills: individual and group. Includes verbal and nonverbal skills, critical thinking in selecting and organizing materials, audience analysis and speaking presentation. Group skills include task and relational interaction, required interdependence, working across cultural differences, group decision-making and shared logistics of presentation. Student evaluations are based on nationally normed speaking competencies. (3+0)

COMM F141X **Fundamentals of Oral Communication: Public Context**
3 Credits
Speaking skills for individual presentation. Includes verbal and nonverbal skills, critical thinking in selecting and organizing materials, audience analysis, informative and persuasive speaking, and actual presentations. Student evaluations are based on nationally normed speaking competencies. (3+0)

COMM F180 **Introduction to Human Communication** (s)
3 Credits Offered Spring
Critical thinking about fundamental concepts in human communication in interpersonal, group, public, organizational and intercultural settings. Introduction to inquiry into human communication as a social and human science. (3+0)

COMM F300X **Communicating Ethics** (h)
3 Credits
An examination of ethical choices which are communicated in everyday encounters. Examines human moral development from a variety of perspectives, including feminist interpretations. Creation and communication of human values explored through the discussion of a series of contemporary dilemmas. Also available via Independent Learning. ***Prerequisites: Junior standing; placement in ENGL F111X or higher; or permission of instructor.*** (3+0)

COMM F320 **Communication and Language** (s)
3 Credits
Examination of the nature of language and its place in human communication, with special attention to the creation of meaning in conversation. ***Prerequisites: Any lower-division communication course or permission of instructor.*** (3+0)

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COMM F321 W Nonverbal Communication (s)
3 Credits
Non-lexical behavior in human communication, including consideration of space, physical environment, physical appearance and dress, kinesics, facial expression and non-lexical vocal behavior. ***Prerequisites: Any lower division communication course; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** (3+0)

COMM F322 W Communication in Interpersonal Relationships (s)
3 Credits
An examination of communication in the most basic human context, the relational dyad. Emphasis on the ongoing, co-construction of the relationship as communicative action. Discussion of interpersonal relationships generally, and extensive discussion of communication in the patterns of coming together, relationship maintenance, relational and personal growth in relationships, relational conflict, and relational disengagement. Theoretical and practical perspectives. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** (3+0)

COMM F330 Intercultural Communication (s)
3 Credits Offered Spring
The nature and sources of problems in communication that may arise when persons with different cultural backgrounds interact. Emphasis on problems in intercultural communication in Alaska. ***Prerequisites: Any lower-division communication course or permission of instructor.*** (3+0)

COMM F331 O Advanced Group Communication (s)
3 Credits
Current research and theory in intergroup and intragroup relations. Topics include the study of leadership, power, group structure, participation and conflict. ***Prerequisites: COMM F131X or COMM F141X; any lower-division communication course; or permission of instructor.*** (3+0)

COMM F335 O Organizational Communication (s)
3 Credits
Examines current theoretical and methodological approaches undergirding the construction of organizations via the communication process. Includes functional (message flow, load and network analysis) as well as interpretive (metaphors, narratives and organizational culture) approaches to the study of organizational communication. ***Prerequisites: COMM F131X or COMM F141X; any lower-division communication course; or permission of instructor.*** (3+0)

COMM F351 Gender and Communication (s)
3 Credits Offered Fall
Basic socialization differences exist in the communication practices of women and men in every culture, resulting in differing cultural constructions of male and female gender. Those differences are addressed in the interpersonal, organizational and cultural contexts. Exploration of cultural female/male dichotomy as well as individual similarities. ***Prerequisites: Any lower-division communication course or permission of instructor.*** Cross-listed with WGS F351. (3+0)

COMM F352 Family Communication (s)
3 Credits
Exploration of the functions of communication in marriage and the family, sequences and patterns of family communication, family communication as a continual process of coping with dialectical tensions, and the complexity of changing family life in Western societies. ***Prerequisites: Any lower-division communication course or permission of instructor. Recommended: COMM F322.*** (3+0)

COMM F353 Conflict, Mediation, and Communication (s)
3 Credits
Examines conflict as a complex communication event, together with the role of the mediator in building constructive outcomes in conflicts. Emphasis on developing skills to engage in mediation. ***Prerequisites: Any F100-level communication course or permission of instructor.*** (3+0)

COMM F380 Communication and Diversity (s)
3 Credits Offered Spring
Provides students with a cognitive and experiential foundation for understanding how the communication process works in the context of diversity. Includes an in-depth examination of those processes and products of processes that lead communicators to devalue differences in one another. (3+0)

COMM F401 Communication Research Methods (s)
3 Credits Offered Fall
Quantitative research methodologies employed in the conduct of research on communication phenomena. ***Prerequisites: Any F300-level communication course; senior standing; or permission of instructor.*** (3+0)

COMM F425 W Communication Theory (s)
3 Credits Offered Spring
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. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; any F300-level communication courses; senior standing; or permission of instructor.*** (3+0)

COMM F432 O Professional Public Speaking
3 Credits
Professional clear effective speaking. Uses evaluation criteria and assignments to build speaking competencies. Professional preparation for students whose career path includes public speaking. ***Prerequisites: COMM F131X or COMM F141X; senior standing.*** (3+0)

COMM F441 Persuasion (s)
3 Credits
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. ***Prerequisites: Any F300-level communication course or permission of instructor.*** (3+0)

COMM F462 W Communication in Health Contexts (s)
3 Credits
Health communication as an established context for communication study will be explored. Problems in health communication will be examined as well as how those problems are exacerbated by the various matters of diversity, language and setting. Communication between health care professionals, between health care providers and health care consumers, between health care facilities and communities, and the legal perspectives of health communication will be topical. ***Prerequisites: Any F300-level communication course; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** (3+0)

COMM F469 Communication Internship
1-3 Credits Offered As Demand Warrants
Links academic and professional on-site learning. Students must arrange an appropriate internship. The internship must be relevant to communication, provide guided learning experiences in a profession that would be appropriate and of interest for employment after graduation, and include a minimum of 150 hours on-site. COMM F469 receives a deferred grade, which will then be completed following (or concurrent) fall semester when the student enrolls in COMM F470. Evaluation will be done by both site supervisor and course instructor, and the grade assigned will apply to the credits for both COMM F469 and COMM F470. ***Prerequisites: Junior or senior standing; permission of instructor.*** (0+0+10-30)

COMM F470 Communication Internship Seminar
3 Credits Offered As Demand Warrants
Will improve job-hunting and networking skills and apply organizational communication theories (workplace socialization processes, cultural rituals, negotiation of power, social capital, emotional labor, etc.). COMM F469 receives a deferred grade, which will then be completed following (or concurrent) fall semester when the student enrolls in COMM F470. Evaluation will be done by both site supervisor and course instructor, and the grade assigned will apply

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to the credits for both COMM F469 and COMM F470. ***Prerequisites: COMM F469; junior or senior standing; permission of instructor.*** (3+0)

COMM F475 W **Applied Communication in Training and Development** (s)
3 Credits
Applies communication theory and research to organizational settings. Includes the identification and assessment of problems and opportunities that would benefit from the application of communication interventions including training, development and transformation technologies. ***Prerequisites: Any F300-level communication course; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** (3+0)

COMM F482 W,O **Capstone Seminar in Communication** (s)
3 Credits Offered Spring
Original research to demonstrate ability to read and understand social research, synthesize information, formalize a research question and use research skills. This senior capstone course requires a research project presented in a public speaking forum. ***Prerequisites: COMM F131X or COMM F141X; COMM F401; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** (3+0)

COMM F600 **Introduction to Professional Communication**
3 Credits Offered Fall
An introduction to professional practices important to communication careers. Professional writing and editing methods and techniques used in academic and/or professional careers. Development and presentation of professional reports which would include quantitatively- and qualitatively-based support. A.P.A. style guide will be covered. ***Prerequisites: Enrollment in M.A. in Professional Communication or permission of instructor.*** (3+0)

COMM F601 **Communication Research Methodologies: Social Science**
3 Credits Offered Fall
Introduction to the range of methodologies used to produce both practical and theoretic knowledge in the discipline. Presents the relationships between scientific questions, appropriate selection of methodology and types of knowledge products. ***Note: COMM/JRN F601 is a required core course for the M.A. in Professional Communication.*** Cross-listed with JRN F601. (3+0)

COMM F602 **Communication Research Methodologies: Human Science**
3 Credits Offered Spring
An introduction to research using a constructionist epistemology and the methodologies of the human science contexture. Includes evaluation and preparation of research using a variety of methodologies and to employ the data collection techniques that are implied by those methodologies. ***Prerequisites: COMM F601; COMM F625; or permission of the instructor.*** (3+0)

COMM F622 **Interpersonal Interaction**
3 Credits
All understandings of communication study begin at the interpersonal level because this is the context in which the relation of self and the social is most clear. Interpersonal Interaction will provide students an opportunity to investigate a particular communication context of their choice (health, family, aging, conflict, relational, education, etc.) and ways in which interpersonal interactions interconnect human social life at all levels of lived experience. ***Prerequisites: Enrollment in M.A. in Professional Communication degree or permission of instructor.*** (3+0)

COMM F625 **Communication Theory**
3 Credits Offered Fall
Required course for the master's degree in Professional Communication. The course is designed to acquaint students with both the historical evolution of the discipline against the backdrop of the evolution of the social sciences and with the theoretical perspectives of knowledge-building that have marked that disciplinary evolution. Students will learn the contextual interconnectedness of philosophy and theory. Finally, Communication Theory will also make the essential connections between theoretical perspectives and their professional uses. Cross-listed with JRN F625. (3+0)

COMM F631 **Teambuilding**
3 Credits Offered As Demand Warrants
Small group communication theory and methods linked to professional applications. Ways to create, maintain and reward productive work teams. Face-to-face and mediated group sessions will be discussed as well as the impact of professional work groups on organizational teambuilding. Students will work with teambuilding interventions that they will be able to apply in a variety of organizational settings. ***Prerequisites: COMM F600. Recommended: COMM F625.*** (3+0)

COMM F635 **Organizational Culture and Communication**
3 Credits
Contemporary perspectives on communication in the organizational context. The interpretive paradigm will be examined in terms of the broad range of knowledge currently being generated by communication scholars and other professionals who are looking more closely at the ways communication produces the social contexts in which it occurs. Human organizations and their transparency to the communication of their members is the pragmatic substance of the course. ***Prerequisites: Enrollment in M.A. in Professional Communication degree or permission of instructor.*** (3+0)

COMM F642 **Health Communication**
3 Credits Offered As Demand Warrants
Health Communication is intended to give students and interested professionals in related fields access to the most current research in this area. The course will address human communication at every level of interaction in the provision of health care: interpersonal (e.g., doctor/ patient), small group (e.g., clinic cardiac team), intra-organizational (e.g., medical staff and business staff), inter-organizational (e.g., hospital and schools), public campaigns (e.g., Center for Disease Control and prevention initiatives on drunk driving), and associated communication factors such as culture and diversity. Includes involvement in research and grant-proposal writing. ***Prerequisites: Enrollment in M.A. in Professional Communication degree or permission of instructor.*** (3+0)

COMM F661 **Mentored Teaching in Communication**
1 Credit
Mentored teaching provides consistent contact on course-related issues between teaching assistants and mentoring faculty. Graded Pass/Fail. ***Prerequisites: Enrollment in M.A. of Professional Communication or permission of instructor; award of teaching assistantship in communication. Note: Teaching assistants are required to be enrolled in a mentoring teaching section while teaching. May be repeated up to four times for credit.*** (1+0+2)

COMM F675 **Training and Development Communication**
3 Credits Offered Spring
Training and Development Communication offers students practical, current understandings of planned training, development and transformation processes as they are applied in the organizational setting. The information and class projects will help prepare training and development specialists, consultants and others whose interest is in this growing communication field. ***Prerequisites: Enrollment in M.A. in Professional Communication degree or permission of instructor.*** (3+0)

COMM F680 **Communication and Diversity in the Professional World**
3 Credits Offered Spring
Case study methods applied to the ever-expanding problems of communication in a changing workplace. The diversity of gender, race, ethnicity, nationality, physical ability, sexual orientation and age are reshaping the professional world at every level and communication professionals are increasingly called upon to formulate ways of accommodating this change. The course will prepare students to address diversity and planned changes in the workplace. ***Prerequisites: Enrollment in M.A. in Professional Communication degree or permission of instructor.*** (3+0)

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COMM F682 **Seminar in Communication**
3 Credits Offered As Demand Warrants
A variable content seminar intended to give students an opportunity to work closely with communication faculty in the study of topics, ideas or methodologies significant to the communication discipline (e.g., relational conflict, social construction, narrative research, etc.). ***Prerequisites: Enrollment in M.A. in Professional Communication degree or permission of instructor.*** (3+0)

COMM F699 **Thesis**
1-9 Credits
Every candidate for the communication concentration of the master's degree in professional communication will complete a thesis project. The requirement consists of an original piece of communication research directed by a member of the graduate faculty in the communication department. The completed and accepted thesis will be presented in an appropriate public forum. Graded Pass/Fail. (0+0)

COMMUNITY HEALTH

CHP F082 **Community Health Aide — Pre-session I**
1-3 Credits Offered As Demand Warrants
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. ***Prerequisites: Employment by the health corporation as a community health aide or permission of instructor.*** (1-3+0)

CHP F131 **Community Health Aide — Session I**
8 Credits Offered As Demand Warrants
Introduction to providing village primary health care services with remote supervision of a physician. Topics include CHP standard of care, use of the CHA/P Manual, history-taking and physical exam, lab tests, reporting to the physician, medical charting and medication administration. Supervised clinical experiences prepare the student to conduct patient evaluation of common village health problems of children and adults. Introduction to human anatomy and function, wellness and disease concepts, crisis intervention and emergency care. A 200-hour field component at the students' village clinic follows the didactic program. Graded Pass/Fail. ***Prerequisites: Employed as CHA by a health corporation or permission of the instructor.*** (8+0)

CHP F132 **Community Health Aide — Session II**
8 Credits Offered As Demand Warrants
Reinforces problem-oriented patient encounter process. Includes patient education, introduction to prenatal and well child care, sexually transmitted diseases, HIV, substance abuse, mental illness and death and dying issues. Session I material and emergency care are reinforced and expanded upon. Includes 200-hour field component at the student's village clinic. Graded Pass/Fail. ***Prerequisites: CHP F131.*** (8+0)

CHP F133 **Community Health Aide — Session III**
8 Credits Offered As Demand Warrants
Session II content reinforced and expanded upon. Additional topics include prenatal care, family planning, fetal alcohol syndrome, emergency delivery techniques, newborn and well child care including immunizations, nutrition, dental health, adult health surveillance, family violence and sexual abuse/rape and clinic management. A 200-hour field component at the students' village clinic follows the didactic program. Graded Pass/Fail. ***Prerequisites: CHP F132.*** (8+0)

CHP F134 **Community Health Aide — Session IV**
8 Credits Offered As Demand Warrants
Common patient problems within the body systems are reviewed with a focus on assessment skills and management plans. Previous session content is reviewed. Follow-up care for patients with chronic illness, injury prevention, tuberculosis, cancer, environmental health, post partum care, adolescent care and older adult/elder care. A 200-hour field component at the students' village clinic follows the didactic program. Graded Pass/Fail. ***Prerequisites: CHP F133.*** (8+0)

CHP F135 **Community Health Aide Preceptorship**
2 Credits Offered As Demand Warrants
Supervised primary care clinical experience. Minimum of 30 contact hours of direct patient care required. Students provide patient care in a variety of clinical settings including outpatient (acute and emergency care), prenatal, well child and chronic care clinics. Additional experiences are scheduled with the referral center (hospital) departments. Graded Pass/Fail. ***Prerequisites: CHP F134.*** (2+0)

CHP F203 **Clinical Update for Community Health Practitioners**
1-3 Credits Offered As Demand Warrants
Review, update and reinforcement of knowledge and skills taught in CHP F131, CHP F132, CHP F133 and CHP F134. 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. ***Prerequisites: CHP F134.*** (1-3+0)

CHP F206 **Mental Health and Substance Abuse**
1-3 Credits Offered As Demand Warrants
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. ***Prerequisites: CHP F134 or permission of instructor.*** (1-3+0)

CHP F207 **Maternal and Infant Health**
1-3 Credits Offered As Demand Warrants
Review of the anatomy of the reproductive system, family planning, pregnancy, fetal development, prenatal care, prenatal education, emergency delivery, postpartum care for mother and baby, and well-child evaluations and immunizations. ***Prerequisites: CHP F134 or permission of instructor.*** (1-3+0)

CHP F208 **Communicable Diseases**
1-3 Credits Offered As Demand Warrants
Expands concepts 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. ***Prerequisites: CHP F134 or permission of instructor.*** (1-3+0)

CHP F210 **CHAM Use and Documentation**
1 Credit
Review and explore many types of patient encounters encompassed by the scope of practice of the Alaska Community Health Aide/Practitioner (CHA/P). Focus is on professional standard of care issues and provision of competent and legal documentation of patient encounters. Emphasis on proper use of the Alaska Community Health Aide/Practitioner (CHAM) to conduct and document the encounter and its legal significance. ***Prerequisites: CHP F131; CHP F132. Special restrictions: Employed as a Community Health Aide by a Native Tribal Health Organization.*** (0+0+32)

CHP F211 **Health Education**
1-3 Credits Offered As Demand Warrants
Methods and philosophy of health education, use and sources of audiovisual 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. (1-3+0)

CHP F212 **Diabetes: Primary Prevention and Village Medical Care**
1-3 Credits Offered As Demand Warrants
Pathophysiology, primary prevention and follow-up treatment of the disease diabetes. Topics include the problem of Type II diabetes in rural Alaska, CHP

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role in the village health care system, Type I and Type II diabetes, primary prevention of Type II diabetes, village medical care and referral, patient education, emergency care and diabetes medications. The clinical training portion of the course is available for Community Health Aides/Practitioners only. (1-3+0)

CHP F214 **Cancer: Risks, Diagnosis and Treatment**
3 Credits Offered Spring, As Demand Warrants
Causes and facts about cancer in the Alaska Native population. Includes cancer risk factors, healthy lifestyle behaviors and the importance of early screening. Presents cancer diagnosis and treatment. Explores pain management, loss and grief. Includes self-care, stress and burnout issues for family and caregivers. ***Recommended: CHP F134.*** (3+0)

CHP F215 **Death and Dying**
3 Credits Offered As Demand Warrants
Focusing on contemporary primary care issues relating to death and dying. Improving individual coping skills in loss and grief situations. Topics include theories of grief and loss, care of the terminally ill patient, suicide, euthanasia, traumatic death and neonatal death. Cultural perspectives on dying, body preparation, burial rites, advanced directives, death certificates and legal issues reviewed. (3+0)

CHP F220 **Women's Health: Breast and Cervical Cancer Screening**
2 Credits Offered As Demand Warrants
Review of anatomy, physiology and pathophysiology of the female breasts and genitals, with reinforcement of identification of risk factors as they relate to the development of breast and cervical cancer. Skills taught include female breast and genital history taking, examination to include Pap, chlamydia and gonorrhea specimen collection, development of appropriate assessments and plans. Areas emphasized: prevention and/or early detection. ***Prerequisites: CHP F134 or permission of instructor.*** (2+0)

CHP F250 **Current Issues in Rural Health Care**
1-3 Credits Offered As Demand Warrants
Selected current issues in medical education intended for, but not limited to, community health aides/practitioners with emphasis on expanding concepts relating to understanding, diagnosis and management of illnesses common to rural Alaskan communities. May be repeated for credit. Community Health majors may apply up to a maximum of three credits towards the F200-level major specialty requirements for A.A.S. degree. Graded Pass/Fail. (1-3+0)

COMPUTER AND INFORMATION TECHNOLOGY SYSTEMS

CITS F201 **Microcomputer Operating Systems Support**
1-3 Credits Offered As Demand Warrants
Comprehensive exploration of a current microcomputer operating system: use, configuring, installing and administering. Topics include end-user and technical support. Also offered Pass/Fail as CITS F201P. ***Recommended: CIOS F128 or equivalent skills.*** (1-3+0)

CITS F202 **Microcomputer Hardware Support**
1-3 Credits Offered As Demand Warrants
Fundamental hardware and software (associated with hardware) configuration and troubleshooting. Includes installing, removing and configuring computer hardware components; installing and configuring software applications and operating systems to support hardware; diagnosing hardware and software problems; and developing troubleshooting and configuration procedures. ***Recommended: CITS F201 or equivalent skills.*** (1-3+0)

CITS F203 **Information Technology Support Fundamentals**
4 Credits Offered As Demand Warrants
Overview of skills and knowledge required by professional computer support technicians to support and troubleshoot computer operating systems and computer hardware, including the purpose and function of the internal components of a computer, how to assemble a computer system, install an operating system and the basic skills and knowledge required to connect to and share resources in a network environment. ***Recommended: CIOS F128 or equivalent skills.*** (4+0)

CITS F204 **Introduction to Network Support and Administration**
3 Credits Offered As Demand Warrants
Features and functions of networking components and the knowledge and skills needed to install, configure and troubleshoot basic networking hardware, protocols and services. Develop technical ability in the areas of media and topologies, protocols and standards, network implementation and basic network administration and support. ***Recommended: CITS F201; CITS F202; or equivalent skills.*** (3+0)

CITS F205 **Introduction to Microcomputer Programming**
1-3 Credits Offered As Demand Warrants
Microcomputer programming focused on programming concepts for applications, operating systems and web technologies. Supplementing and integrating computer applications with built-in programming tools. ***Recommended: CIOS F130; CIOS F135; CIOS F240; CITS F201 or equivalent skills.*** (1-3+0)

CITS F212 **Server Operating Systems**
3 Credits Offered As Demand Warrants
Fundamentals in installing, configuring and maintaining server operating systems. Learn how to configure and administer network accounts, resources, and common services deployed on server operating systems. ***Prerequisite: CITS F201; CITS F202; or CITS F203 or permission of instructor. Recommended: CITS F204; or F241; or equivalent skills.*** (3+0)

CITS F219 **Microcomputer Operating Systems: Topics**
1-4 Credits Offered As Demand Warrants
In-depth and comprehensive technical class covering operating system skills and concepts. Course may be repeated for credit. ***Prerequisites: CITS F201 or equivalent skills.*** (1-4+0)

CITS F220 **Implementing Internet Tools and Technologies**
3 Credits Offered As Demand Warrants
Exploration of advanced Internet topics. Building a presence on the Internet — evaluate web hosting services, domain names and registration services. How to implement and understand web communication tools and develop and understand the impact of participating in social networks and the changing nature of these networks. ***Recommended: CIOS F146 or equivalent skills.*** (3+0)

CITS F221 **Graphics and Multimedia for the Web**
3 Credits Offered As Demand Warrants
Creating graphics and multimedia content for the Web. Graphic topics include formats, size and resolution, optimization and design fundamentals. Multimedia topics include animation, interactivity and combining sound, speech, graphics, photographs and video. ***Recommended: CIOS F150; or equivalent skills.*** (3+0)

CITS F222 **Internet Authoring and Design**
1-3 Credits Offered As Demand Warrants
Comprehensive survey of a professional authoring tool to create documents for effective distribution through the Internet. Includes design and preparation of documents for electronic distribution. Also available via Independent Learning. ***Recommended: CIOS F146 and CIOS F150 or equivalent computer literacy including saving/retrieving files, use of office applications, Internet and email.*** (1-3+0)

CITS F224 **Web Scripting**
3 Credits Offered As Demand Warrants
Introduction to client-side Web page scripting. Covers basic programming concepts, including data representation, functions, control structures and arrays. Topics include client-side scripting with JavaScript, object-oriented JavaScript, design issues, error handling, security, the Document Object Model and dynamic HTML and AJAX. ***Prerequisite: CITS F205; or CS F103; F201; or F205; CITS F222; or permission of instructor.*** (3+0)

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CITS F225 **Web Databases and Programming**
3 Credits Offered As Demand Warrants
Programming and database design as it relates to creating dynamic web sites and applications. Develop web applications to automate websites, create and access web databases, provide tools for users to modify parts of their own website, show random data, create and access files on the fly and reduce repetitive maintenance. Course topics include CSS, SSI, DHTML, SQL, PHP and other web technologies. ***Recommended: CITS F220; CITS F222; or equivalent skills.*** (3+0)

CITS F228 **Advanced Website Design and Development**
3 Credits Offered As Demand Warrants
Plan and implement professional and comprehensive websites that utilize and integrate multiple website design and development technologies such as XHTML, CCS, XML, Ajax, Web APIs, client-side and server-side programming, graphics and multimedia, and web communication tools. ***Prerequisites: CITS F221; F222; F224; F225; or permission of instructor.*** (3+0)

CITS F240 **System and Network Services Administration**
3 Credits Offered As Demand Warrants
Implement and administer the core network services operating within a network environment. Topics include: DHCP, DNS, remote access, file and print, Web, update and patch management, security and network management services. Develop a conceptual understanding of each network service and learn how to plan, implement and administer each service. ***Prerequisites: CITS F204; or F241; or permission of instructor. Recommended: CITS F212.*** (3+0)

CITS F241 **Networking and LAN Infrastructure Basics**
4 Credits Offered As Demand Warrants
Design and implementation of networks in small- to medium-sized environments. Focuses on network terminology and protocols, local-area networks (LANs), wide-area networks (WANs), open systems interconnection model, cabling, cabling tools, routers, router programming, Ethernet, Internet protocol addressing and network standards. Special fees apply. ***Recommended: CITS F201; CITS F202; or equivalent skills.*** (4+0)

CITS F242 **Routers and Routing Concepts**
4 Credits Offered As Demand Warrants
The skills and knowledge necessary to configure routers, manage router software, configure routing protocols. Troubleshooting internets and implementing IP-based networks. ***Prerequisites: CITS F241 or permission of instructor.*** (4+0)

CITS F243 **Intermediate Networking and LAN Infrastructure**
4 Credits Offered As Demand Warrants
Provide an understanding of the intermediate LAN technologies and protocols used to build hierarchical networks. Learn how to configure and integrate LAN devices and technologies into hierarchical internetworks. Topics include: switch configuration, virtual LANs, spanning tree protocol, and VLAN trunking protocol, inter-VLAN routing, and wireless LANs. ***Prerequisites: CITS F241; or permission of instructor.*** (4+0)

CITS F244 **Advanced Network Infrastructure Services**
4 Credits Offered As Demand Warrants
Provides the skills and knowledge to select and implement advance services used within a network infrastructure. Learn to implement and configure common wide area network (WAN) data link protocols, how to create and implement security policies, access control lists and advanced addressing services. Learn to detect, troubleshoot and correct common network implementation issues. Topics include: WAN technology and terminology, PPP, frame relay, network security, DHCP, NAT, IPv6 and network troubleshooting. ***Prerequisites: CITS F242; CITS F243; or permission of instructor.*** (4+0)

CITS F249 **Networking and Communications: Topics**
1-4 Credits Offered As Demand Warrants
In-depth technical and comprehensive coverage of networking and communications skills and concepts. Note: May be repeated for credit. Special fees apply. ***Recommended: CITS F241 or equivalent skills.*** (1-4+0)

CITS F261 **Computer and Information Security**
3 Credits Offered As Demand Warrants
The fundamental concepts of computer and information security. Course topics include: understanding threats to a computing infrastructure, understanding encryption technologies, securing communications and applications, security policies and responding to incidents. ***Prerequisites: CITS F204; or F241; or permission of instructor.*** (3+0)

CITS F265 **Directory Services Administration**
3 Credits Offered As Demand Warrants
The purpose and components that make up directory services and the role these services plays in storing, organizing and managing information in a network environment. How to create and configure directory service objects to manage access to network resources, to implement and manage group policy objects, and to backup, restore, monitor and troubleshoot directory service related issues. ***Prerequisite: CITS F204; or F241; CITS F212; or permission of instructor. Recommended: CITS F240; or equivalent skills.*** (3+0)

CITS F281 **Computer Technical Support**
1-3 Credits Offered As Demand Warrants
Prepares students to provide technical support to computer users. Skills include: diagnosing problems, researching solutions, meeting user needs, developing training materials, and giving workshops and lessons. Course may be repeated for credit. ***Prerequisites: Comprehensive experience using the Internet.*** (1-3+0)

CITS F282 **IT Troubleshooting Skills**
1-3 Credits Offered As Demand Warrants
Practical IT troubleshooting skills, including hardware, software, networks and operating systems. The course will include practical and useful troubleshooting scenarios. May be repeated for a total of 12 credits. ***Recommended: In-depth knowledge of networks, operating systems, hardware and software.*** (1-3+0)

CITS F284 **Independent Project**
1-3 Credits Offered As Demand Warrants
Student created project or internship that includes learning new skills, applying the skills to significant problems, and demonstrating the results to other computer users. Includes application of learned skills in a professional manner. ***Prerequisites: 12 credits in CITS courses and permission of instructor.*** (1-3+0)

CITS F285 **Cooperative Work Experience**
3 Credits Offered As Demand Warrants
On-the-job training related to occupational objectives. Weekly seminar with coordinator required. ***Prerequisites: 12 credits in CITS courses and permission of instructor.*** (3+0)

CITS F288 **Professional Certification Review**
1-3 Credits Offered As Demand Warrants
Prepares students for national or industry specific certification examination. (1-3+0)

CITS F289 **Information Technology: Topics**
1-3 Credits Offered As Demand Warrants
Comprehensive coverage of a specific information technology topic. ***Recommended: CITS F203 or equivalent skills.*** (1-3+0)

COMPUTER INFORMATION AND OFFICE SYSTEMS

CIOS F100 **Introduction to Personal Computers**
1 Credit Offered As Demand Warrants
Introduction to basic computer skills including using the mouse and menus, opening and exiting applications, creating basic word processing and spreadsheet files, basic file management, web browsing, email and virus protection. Graded Pass/Fail. (1+0)

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CIOS F103 Computer Survey
1-3 Credits Offered As Demand Warrants
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. (1-3+0)

CIOS F128 Using and Configuring PC Operating System
3 Credits Offered As Demand Warrants
How to use, set up, and configure a current PC operating system including basic troubleshooting and maintenance. ***Recommended: CIOS F150 or equivalent computer literacy including saving or retrieving files, use of office applications, Internet and email.*** (3+0)

CIOS F130 Microcomputer Word Processing
1-3 Credits
Comprehensive exploration of topics related to using microcomputer word processors. Includes creating, formatting and revising documents; using proofreading and editing tools; implementing styles; using templates; and customizing the application. ***Recommended: CIOS F150 or equivalent computer literacy including saving/retrieving files, use of office applications, Internet and email.*** (1-3+0)

CIOS F133 Microcomputer Presentation Software
1-3 Credits Offered As Demand Warrants
Designing effective presentations. Includes organizing and designing an effective presentation of information using current microcomputer software. ***Recommended: CIOS F150 or equivalent skills.*** (1-3+0)

CIOS F135 Microcomputer Spreadsheets
1-3 Credits Offered As Demand Warrants
Comprehensive exploration of topics related to using microcomputer spreadsheets. Includes creating, formatting and revising spreadsheets; creating formulas, graphics and charts; and using spreadsheets to organize, analyze and query information. Also available via Independent Learning. ***Recommended: CIOS F150 or equivalent computer literacy including saving/retrieving files, use of office applications, Internet and email.*** (1-3+0)

CIOS F146 Using Internet Tools and Technologies
1-3 Credits Offered As Demand Warrants
Presentation of the Internet. Includes using and configuring current World Wide Web and email, and other communication tools; developing searching strategies; current and future trends; and basic web authoring. Develop a basic understanding of technologies and protocols used on the Internet. Also available via Independent Learning. ***Recommended: Basic computer literacy, including saving and retrieving files and using basic software.*** (1-3+0)

CIOS F150 Computer Business Applications
1-3 Credits Offered As Demand Warrants
Basic introduction to using a computer and office applications. Includes the operating system, how to save/retrieve files; word processing, document creation and formatting; spreadsheets (basic formulas and functions); and the Internet (browsing, searching and email). (Provides basic computer literacy and prepares for CIOS F110; CIOS F130; CIOS F134 and CIOS F146. No previous computer experience is required.) (1-3+0)

CIOS F152 Introduction to Microcomputers in Small Businesses
1-3 Credits Offered As Demand Warrants
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. (1-3+0)

CIOS F189 Microcomputer Applications: Topics
1-3 Credits Offered As Demand Warrants
Extensive coverage of a specific microcomputer application. May be repeated for credit. (1-3+0)

CIOS F215 Information Technology Certification I
1-4 Credits Offered As Demand Warrants
In-depth technical and comprehensive coverage of skills required for the first stage of a specific information technology certification. Course may be repeated for different certifications. Special fees apply. ***Prerequisites: Instructor approval.*** (1-4+0)

CIOS F216 Information Technology Certification II
1-4 Credits Offered As Demand Warrants
In-depth technical and comprehensive coverage of skills required for the intermediate stage of a specific information technology certification. Course may be repeated for different certifications. Special fees apply. ***Prerequisites: Instructor approval.*** (1-4+0)

CIOS F217 Information Technology Certification III
1-4 Credits
In-depth technical and comprehensive coverage of skills required for the advanced stage of a specific information technology certification. Course may be repeated for different certifications. Special fees apply. ***Prerequisites: Instructor approval.*** (1-4+0)

CIOS F218 Information Technology Certification IV
1-4 Credits Offered As Demand Warrants
In-depth technical and comprehensive coverage of skills required for a specialized or advanced stage of a specific information technology certification. Course may be repeated for different certifications. ***Prerequisites: Instructor approval.*** (1-4+0)

CIOS F230 Advanced Word Processing
1-3 Credits Offered As Demand Warrants
Advanced concepts of word processing using various software. ***Prerequisites: CIOS F130.*** (1-3+0)

CIOS F231 Introduction to Desktop Publishing
1-2 Credits Offered As Demand Warrants
Entry-level desktop publishing course introducing the chief features of a page layout program. Step-by-step instructions to create at least three simple publications. ***Prerequisites: Previous computer experience.*** (1-2+0)

CIOS F233 Desktop Publishing
1-3 Credits
Publication design and layout using desktop publishing software. Includes integrating text and graphics, page layout design, scanning and basic image editing. Also available via Independent Learning. ***Recommended: CIOS F150 or equivalent computer literacy including saving/retrieving files, use of office applications, Internet and email.*** (1-3+0)

CIOS F234 Advanced Desktop Publishing
1-3 Credits
Utilization of the advanced features of a page layout program to create camera-ready mechanicals for fliers, brochures and newsletters. Exploration of the elements of good design and the requirements for professional publishing. ***Prerequisites: CIOS F233 or permission of instructor.*** (1-3+0)

CIOS F240 Microcomputer Databases
1-3 Credits Offered As Demand Warrants
Comprehensive introduction to microcomputer databases. Includes basic database concepts; how to maintain and update databases; how to build and use queries and forms; and how to build reports. Introduction to database design. Also available via Independent Learning. ***Recommended: CIOS F150; and CIOS F130 or CIOS F135 or equivalent skills.*** (1-3+0)

CIOS F242 Advanced Databases
1-3 Credits Offered As Demand Warrants
In-depth, technical and comprehensive coverage of varied database skills and concepts. Course may be repeated for credit. ***Requirements: CIOS F240 or equivalent skills.*** (1-3+0)

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CIOS F251 **Integrated Software**
1-3 Credits Offered As Demand Warrants
Focusing on microcomputer applications that integrate multiple tasks into a single tool. Emphasis on integrating and combining information from multiple computer applications. ***Prerequisites: Prior to taking this advanced class, the student is expected to have competence in specific applications and be comfortable using Word, Excel, PowerPoint and Access.*** (1-3+0)

CIOS F255 **Microcomputer Graphics**
1-3 Credits Offered As Demand Warrants
Comprehensive survey of microcomputer graphics using a graphics application. Includes use of professional-level graphics programs to create sophisticated graphics for a variety of uses. Also available via Independent Learning. ***Recommended: CIOS F150 or equivalent computer literacy including saving/retrieving files, use of office applications, Internet and email.*** (1-3+0)

CIOS F257 **Digital Video**
1-3 Credits Offered As Demand Warrants
Comprehensive survey of creating and editing digital video using microcomputer tools. Includes the use of professional-level digital video applications to create short videos for a variety of uses. May be repeated for a total of 12 credits. ***Recommended: Experience with microcomputer graphic applications such as Photoshop.*** (1-3+0)

CIOS F258 **Digital Photography**
1-3 Credits Offered As Demand Warrants
Comprehensive survey of tools and methods to create and edit digital images using microcomputer tools. Includes the use of professional-level digital photography applications. May be repeated for a total of 12 credits. ***Recommended: Experience with microcomputer graphic applications such as Photoshop.*** (1-3+0)

CIOS F502 **Using the Internet**
1 Credit
Accessing Internet services including Usenet, a global electronic bulletin board; Telnet to log on to other computer systems; Gopher and Worldwide Web menu systems; Archie file searches; FTP file transfers; binary file uploads/downloads; and listservs. Ongoing Independent Learning. Special fees apply. ***Prerequisites: CIOS F501.*** (1+0)

CIOS F503 **Applying Telecommunications**
1 Credit
Design and implementation of an approved project using telecommunications in the classroom or work place, or an in-depth research paper. Ongoing Independent Learning. Special fees apply. ***Prerequisites: CIOS F502.*** (1+0)

COMPUTER SCIENCE

A per semester fee for computing facilities will be assessed for one or more CS courses. This fee is in addition to any materials fees.

CS F101 **Computers and Society** (m)
3 Credits
Computer literacy for everyone. Overview of computing machines and automatic data processing. Interaction between social institutions and automated decision-making. Introduction to business applications software and electronic mail. Some programming for understanding, not for skill development. Also available via Independent Learning. ***Prerequisites: Two years of high school mathematics, including at least one year of algebra.*** (3+0)

CS F102 **Introduction to Computer Science** (m)
3 Credits
Introduction to computer science including a discussion of binary numbers, data representation, hardware, software, programming layers, operating systems, applications and networks. This web-based course is offered through the Center for Distance Education. Also available via Independent Learning. ***Prerequisites: Two years of high school mathematics including at least one year of algebra.*** (3+0)

CS F103 **Introduction to Computer Programming** (m)
3 Credits
Programming for non-majors and for those computer science students without the background for CS F201. Concepts of object-oriented programming and algorithm design within the syntax of the JAVA programming language. ***Prerequisites: Math placement at the 100-level.*** (3+0)

CS F201 **Computer Science I** (m)
3 Credits
The discipline of computer science including problem solving, algorithm development, structured programming, top-down design, good programming style, object-oriented programming and elementary data structures. Concepts implemented with extensive programming experience in a structured language and with a group programming project. ***Prerequisites: One year high school level programming or CS F103 and mathematics placement at the F200-level.*** (3+0)

CS F202 **Computer Science II** (m)
3 Credits
The discipline of computer science including problem solving, algorithm development, structured programming, top-down design, good programming style, object-oriented programming and elementary data structures. Concepts implemented with extensive programming experience in a structured language and with a group programming project. ***Prerequisites: CS F201.*** (3+0)

CS F205 **C Programming** (m)
3 Credits Offered As Demand Warrants
A high-level programming course using C for students with some experience in other programming languages such as Java, Perl, Basic, Pascal or Fortran. ***Prerequisites: One year high school programming, CS F103 or CS F201 or ES F201.*** (3+0)

CS F221 **Introduction to LINUX** (m)
3 Credits Offered Fall Even-numbered Years
Introduction to the LINUX operating system including system features, scripting, shell instructions, controlling user processes, maintaining and administering a LINUX system. (3+0)

CS F301 **Assembly Language Programming** (m)
3 Credits Offered Fall
Organization of computer registers, I/O and control. Digital representation of data. Symbolic coding, instructions, addressing modes, program segmentation, linkage, macros and subroutines. ***Prerequisites: CS F201.*** (3+0)

CS F307 **Discrete Mathematics** (m)
3 Credits
Logic, counting, sets and functions, recurrence relations graphs and trees. Additional topics chosen from probability theory. ***Prerequisites: MATH F201X or permission of instructor.*** Cross-listed with MATH F307. (3+0)

CS F311 **Data Structures and Algorithms** (m)
3 Credits
Data structures and the algorithms for their manipulation. Object-oriented programming, arrays, tables, stacks, queues, trees, linked lists, sorting, searching and hashing. ***Prerequisites: CS F202.*** (3+0)

CS F321 **Operating Systems** (m)
3 Credits Offered Spring
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. ***Prerequisites: CS F301.*** (3+0)

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CS F331 **Programming Languages** (m)
3 Credits Offered Spring
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. ***Prerequisites: CS F311.*** (3+0)

CS F361 **Systems Security and Administration** (m)
3 Credits Offered Alternate Fall Odd-numbered Years
Advanced systems programming including privileged instructions and system services, authentication technologies, host-based and network-based security issues. Applications to asynchronous I/O, process control and communication, device drivers and file management. ***Prerequisites: CS F301.*** (3+0)

CS F381 **Computer Graphics** (m)
3 Credits Offered Fall
Creation of computer-generated images on programmable 3-D graphics hardware. Color, lighting, textures, hidden surfaces, 3-D geometric transformations, curve and surface representations, 2-D and 3-D user interfaces, and the visual modeling of physical phenomena. ***Prerequisites: CS F202; MATH F202X or MATH F314.*** (3+0)

CS F405 **Introduction to Artificial Intelligence** (m)
3 Credits Offered Spring Even-numbered Years
Examine diverse branches of Al placing Al in larger context of computer science and software engineering. Knowledge representation formalism and search technology. Programming methodologies; procedural systems such as expert systems and blackboard systems and non-procedural systems such as neural networks. Software engineering aspects of problem selection, knowledge acquisition, verification and validation. Individual projects. ***Prerequisites: CS F311 or permission of instructor.*** (3+0)

CS F411 **Analysis of Algorithms** (m)
3 Credits Offered Fall
Analysis of classic algorithms, their implementation and efficiency. Topics from combinatorics (sets, graphs), algebra (integer arithmetic, primes, polynomial arithmetic, GCD, Diophantine equations, encryption), systems (parsing searching, sorting) and theory (recursion, Turing machines). The complexity classes P, NP and NP complete. ***Prerequisites: MATH F307, CS F311.*** (3+0)

CS F421 W **Distributed Operating Systems** (m)
3 Credits Offered Fall
Detailed level study of distributed operating system algorithms, functions and associated implementation. Distributed operating system tuning methods and security. Role of distributed operating systems in net-centric computing. Programming, documentation and evaluation of distributed operating system segments as projects. ***Prerequisites: CS F321; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** (3+0)

CS F425 **Database Systems** (m)
3 Credits Offered Spring Odd-numbered Years
Data independence, modeling, relationships and organization. Hierarchical, network and relational data models; canonical schema. Data description languages, SQL, query facilities, functional dependencies, normalization, data integrity and reliability. Review of current database software packages. ***Prerequisites: CS F311; CS F321.*** (3+0)

CS F431 W **Programming Language Implementation** (m)
3 Credits Offered As Demand Warrants
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. ***Prerequisites: CS F331; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** (3+0)

CS F441 **System Architecture** (m)
3 Credits Offered Fall
Computer design fundamentals, performance and cost, pipelining, instruction-level parallelism, memory hierarchy design, storage systems, and vector processing. ***Prerequisites: CS F321; EE F341.*** (3+0)

CS F442 **Computer Communication and Networks** (m)
3 Credits Offered Fall Even-numbered Years
Study of computer networks using the ISO/OSI layered model as a framework. Design issues and trade-offs, protocols and selected standards. Emphasis on ISO/OSI Layers 1-4/(Physical, Data Link, Network and Transport Layers), plus medium access sublayers (LAN's, etc.). ***Prerequisites: CS F321.*** (3+0)

CS F451 **Automata and Formal Languages** (m)
3 Credits Offered Spring Odd-numbered Years
Finite automata, regular languages, phrase structured grammars, context free language, push down automata, deterministic context free languages, recursive and recursively enumerable languages, Turing machines, decision problems, and undecidability. ***Prerequisites: MATH F307; CS F201.*** (3+0)

CS F460 **Introduction to Digital Forensics**
3 Credits Offered Fall Odd-numbered Years
Takes a hands-on approach to the forensics examination of computer technology. Focuses on the forensic process, methods, and tools utilized to collect and preserve and examine digital evidence. Course topics include: collection, preservation and examination of evidence from computers including file systems, email and malicious code. ***Prerequisites: CS F321; or permission of instructor.*** (3+0)

CS F462 **Intrusion Detection Systems**
3 Credits Offered Fall Even-numbered Years
Focus on IDS theory and practice and its importance; the origin and resolution of common security threats and vulnerabilities; host and network approaches to IDS implementation; and the legal, ethical, and privacy issues associated with IDS use and policies. ***Prerequisites: CS F361; or permission of instructor.*** (3+0)

CS F463 **Cryptography and Data Security**
3 Credits Offered Spring Odd-numbered Years
Specialized study of cryptography and its application in securing data systems, with an emphasis on applied cryptography. Topics include history of cryptography, encryption, digital signatures, authentication, electronic commerce, key distribution and management, private and public key cryptography, and protocols. ***Prerequisites: MATH F307; CS F311; or permission of instructor.*** (3+0)

CS F471 W **Software Engineering** (m)
3 Credits Offered Fall
Introduction to basic software engineering principles, techniques, methods and standards as applied to the engineering of complex software systems. Topics from software system development process models, multiple view system modeling and specification using UML, classification of software systems, project management and legal issues. ***Prerequisites: Senior standing; CS F311; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** Cross-listed with SWE F471. (3+0)

CS F472 W,O **Senior Project and Professional Practice**
3 Credits Offered Spring
Group projects in a real computer industry environment and produce appropriate documentation and reports. Nature, ethics, and legal considerations of the computer science profession are discussed with an emphasis on ethics. Additional topics include project management, design methodologies, technical presentation, human-machine interface and programming team interactions. ***Prerequisites: Senior standing; CS F471; COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** (3+0)

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CS F480 **Topics in Computer Science**
3 Credits Offered As Demand Warrants
Topics include, but are not limited to; computational linear algebra, cryptography, parallel algorithm development and analysis. Note: Course may be repeated when topics change. (0+3)

CS F481 **Topics in Computer Graphics** (m)
3 Credits Offered Spring
Hardware, software and techniques used in computer graphics taken from topics such as volume rendering, particle systems, shading, image processing, computer aided design, video effects, animation and virtual environments. ***Prerequisites: CS F381.*** (3+0)

CS F490 **Student Internship** (m)
1-3 Credits
Students work on computer science project under the joint direction of a faculty member and participating industry or governmental agency. Graded Pass/Fail. ***Prerequisites: Junior standing and acceptance in an approved internship program.*** (0+0)

CS F602 **Software Project Management**
3 Credits Offered Spring
Work in an IT project environment to produce appropriate documentation and reports. Nature, ethics and legal considerations of managing IT projects are discussed. Includes project management, design methodologies, scope management, risk management, human-machine interface and IT team interactions. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

CS F605 **Artificial Intelligence**
3 Credits Offered Spring Even-numbered Years
Study and writing of AI programs: expert systems, expert system shells, blackboard systems, neural networks. Representation of knowledge, pattern analysis, inference networks, neural network training. Study of software engineering aspects of AI software. ***Prerequisites: Graduate standing or permission of CS graduate advisor.*** (3+0)

CS F611 **Complexity of Algorithms**
3 Credits Offered Fall
Theoretical analysis of various algorithms: topics include sorting, searching, selection, polynomial evaluation, NP completeness, decidability. ***Prerequisites: CS F411.*** (3+0)

CS F621 **Advanced Systems Programming**
3 Credits Offered As Demand Warrants
Multiprogramming and multiprocessing systems. File and program security. Scheduling optimization and system tuning, I/O processing, archiving and system recovery, and initialization. Study of current systems. ***Prerequisites: CS F311 and CS F321.*** (3+0)

CS F622 **Performance Evaluation**
3 Credits Offered As Demand Warrants
A survey of techniques of modeling and testing concurrent processes and the resources they share. Includes levels and types of system simulation, performance prediction, benchmarking and synthetic loading, hardware and software monitors. ***Prerequisites: CS F321 or permission of Computer Science graduate advisor.*** (3+0)

CS F625 **Database Systems Design**
3 Credits Offered Fall
The design and analysis of database systems including data independence, relationships, and organization. Focus on data models, file organization and security, index organization, data integrity and reliability. Review of current database software packages. Design and implementation of a database application project. ***Prerequisites: CS F311.*** (3+0)

CS F631 **Programming Language Implementation**
3 Credits Offered Fall
Formal treatment of programming language translation and compiler design. Parsing context-free languages, translation specifications, machine independent code, NBF, scanners, symbol tables, parsers and recursive descent. Programming of compiler or interpreter segments as projects. ***Prerequisites: CS F331.*** (3+0)

CS F641 **Advanced Systems Architecture**
3 Credits Offered Spring
A study of advanced single processor systems. Detailed study of multiprocessor architectures, such as vector architectures, massively parallel processors and shared-memory multi-processors. ***Prerequisites: CS F441 or permission of Computer Science graduate advisor.*** (3+0)

CS F642 **Advanced Computer Networks**
3 Credits Offered Fall
A study of networks of interacting computers. The problems, rationales and possible solutions for both distributed processing and distributed databases will be examined. Major national and international protocols will be presented. ***Prerequisites: Graduate standing or permission of Computer Science graduate advisor.*** (3+0)

CS F651 **The Theory of Computation**
3 Credits Offered Spring Odd-numbered Years
Languages and formal models of algorithms: Turing machines, phrase structured grammars and recursive functions. Undecidability, the halting problem, Rice's Theorem. ***Prerequisites: CS F451.*** (3+0)

CS F661 **Optimization**
3 Credits Offered Fall Even-numbered Years
Linear and nonlinear programming, simplex method, duality and dual simplex method, post-optimal analysis, constrained and unconstrained nonlinear programming, Kuhn-Tucker condition. Applications to management, physical and life sciences. Computational work with the computer. ***Prerequisites: Knowledge of calculus, linear algebra, and computer programming.*** Cross-listed with MATH F661. (3+0)

CS F670 **Computer Science for Software Engineers**
3 Credits
An overview and survey of the theoretical underpinnings of computer science. Topics are taken from the areas of algorithms and data structures; computer architecture; computer networks, communications and operating systems; computability and formal languages; languages and compilation. Also available via Independent Learning. ***Prerequisites: Graduate standing.*** Cross-listed with SWE F670. (3+0)

CS F671 **Advanced Software Engineering**
3 Credits Offered Spring
Advanced software development as an engineering discipline. Includes investigation of current tools, standards, foundation and trends in software engineering from component-ware, software system composition, e-systems, software architecture and CASE tools. ***Prerequisites: CS F471.*** Cross-listed with SWE F671. (3+0)

CS F672 **Software Process Improvement**
3 Credits Offered Spring Odd-numbered Years
Commonly applied methods for improving the software development process. Emphasis on the Software Engineering Institute's Capability Maturity Model, and specifically on the key process areas of Level 2 and Level 3 of that model. These include software configuration management, software quality assurance and software standards. ***Prerequisites: CS F671 or permission of instructor.*** Cross-listed with SWE F672. (3+0)

CS F673 **Software Requirements Engineering**
3 Credits Offered As Demand Warrants
Focus on the requirements analysis phase of the software development life cycle. Study ways to obtain, analyze and specify complete and correct sets

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of requirements. Critique of selected requirements analysis models. Study of current large scale software developments that have failed or are failing. Development of software requirements specifications for large and real software systems via team efforts. Also available via Independent Learning. ***Prerequisites: CS F671 or permission of instructor.*** Cross-listed with SWE F673. (3+0)

CS F674 **Software Architecture**
3 Credits Offered Spring
Software architectural styles are introduced and defined as structural descriptions of software systems. Methods for constructing and binding software systems are introduced and specified as operational views. The architectural approach, as a classical engineering method for describing structure and behavior of technical artifacts, will be applied for the composition of software systems. ***Prerequisites: CS F671.*** Cross-listed with SWE F674. (3+0)

CS F680 **Topics in Computer Science**
1-4 Credits Offered As Demand Warrants
Example topics include, but are not limited to, software requirements engineering, cryptography, parallel algorithm development and analysis. May be repeated for credit with change of topic. ***Prerequisites: Varies with each topic. Recommended: Varies with each topic.*** (1-4+0)

CS F681 **Topics in Computer Graphics**
3 Credits Offered Spring
Hardware, software and techniques used in computer graphics taken from topics such as refresh, storage, raster scan technology, volume rendering, particle systems, shading, image processing, computer aided design, video effects, animation and virtual environments. ***Prerequisites: CS F481 and MATH F314.*** (3+0)

CS F690 **Graduate Seminar and Project**
1-6 Credits Offered Fall
First semester of two-semester seminar in which students will, individually or in teams, work on and present the results of major programming or literature survey projects in computer science or software engineering. Written and oral reports will be required. Graded Pass/Fail. ***Prerequisites: 12 credits in graduate computer science or software engineering courses; or permission of Computer Science or Software Engineering graduate advisor.*** Cross-listed with SWE F690. (1-6+0)

CS F691 **Graduate Seminar and Project**
3 Credits Offered Spring
Second semester of a two-semester seminar in which students will, individually or in teams, work on and present the results of major programming or literature survey projects in computer science or software engineering. Written and oral reports will be required. Graded Pass/Fail. ***Prerequisites: CS F690; 12 credits in graduate computer science or software engineering courses; or permission of Computer Science or Software Engineering graduate advisor.*** Cross-listed with SWE F691. (3+0)

CONSTRUCTION MANAGEMENT

CM F102 **Methods of Building Construction**
3 Credits Offered As Demand Warrants
Introduces basic knowledge of building materials, technical specifications, techniques, and systems. Outlines structural systems, construction processes, and assemblies. Includes a field project student team research of current Alaskan building type. Special fees apply. (3+0)

CM F123 **Codes and Standards**
3 Credits Offered As Demand Warrants
Provides an introduction and overview of the fundamental provisions of the building codes used for plan review, life-safety evaluation of buildings, and community development. Special fees apply. ***Prerequisites: CM F102; DRT F170.*** (3+0)

CM F142 **Mechanical and Electrical Technology**
4 Credits Offered As Demand Warrants
Introduces the basic mechanical and electrical systems required in all buildings for the safety, health, comfort, and convenience of the occupants. Emphasizes design criteria, code requirements and interpretation of construction drawings. Special fees apply. (3+2)

CM F163 **Building Construction Cost Estimating**
3 Credits Offered As Demand Warrants
Presents methods and techniques for preparing accurate cost estimates for building construction projects. Emphasizes quantity surveys, productivity, bidding and negotiation procedures, and cost control systems. Special fees apply. ***Prerequisites: CM F102; DRT F170; MATH F107X.*** (2+2)

CM F201 **Construction Project Management**
3 Credits Offered As Demand Warrants
Examines construction project management methods and processes. Includes project delivery systems, contract agreements, contract general and supplementary conditions and contract administration procedures. Special fees apply. ***Prerequisites: CM F102; DRT F170.*** (3+0)

CM F202 **Project Planning and Scheduling**
3 Credits Offered As Demand Warrants
Examines concepts and methods for planning and scheduling of construction projects. Includes identifying work elements, analyzing resources, determining activity durations, preparing CPM schedules using computer scheduling software, preparing schedule updates and analyzing planning versus actual progress for cost control. Special fees apply. ***Prerequisites: CM F201; MATH F108.*** (2+2)

CM F205 **Construction Safety**
3 Credits Offered As Demand Warrants
Examines safety and health practices for the construction industry. Includes developing and implementing construction project site-specific safety plans, analyzing the laws and regulations that govern safety, evaluating construction site hazards and environmental conditions and incident investigation and reporting. Special fees apply. ***Prerequisites: CM F201.*** (3+0)

CM F213 **Civil Technology**
4 Credits Offered As Demand Warrants
Outlines elements of civil design, including soils and soil mechanics, foundations, roads, and utilities using local, state and federal regulations. Students will also be introduced to elements of construction surveying. Special fees apply. ***Prerequisites: CM F102; DRT F170.*** (2+4)

CM F231 **Structural Technology**
4 Credits Offered As Demand Warrants
Examines structural theory and the physical principles that underlie structural behavior. Includes the use of materials in a manner to maintain structural stability against such natural forces as gravity, wind, snow and earthquakes. Covers connection detailing and code requirements for wood, steel and reinforced concrete. Special fees apply. ***Prerequisites: CM F102; DRT F170.*** (2+4)

CM F263 **Civil Construction Cost Estimating**
3 Credits Offered As Demand Warrants
Presents methods and techniques for preparing accurate cost estimates for earthwork, roads, highways, underground utilities and site work. Emphasizes quantity surveys, unit costs, production factors, bidding and construction equipment management. Special fees apply. ***Prerequisites: CM F213; MATH F108.*** (2+2)

CM F299 **Construction Management Internship**
3 Credits Offered As Demand Warrants
Places students in building construction offices related to student's educational program and occupational objectives. Direct supervision by contractor professional, program faculty and Career Services coordinator. Graded Pass/Fail. ***Prerequisites: Department approval.*** (0+0+225)

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CONSTRUCTION TRADES TECHNOLOGY

CTT F100 **Construction Technology Core**
3 Credits Offered As Demand Warrants
Basic construction techniques using OSHA approved standards by stressing how to follow safe work practices and procedures, how to safely use hand and power tools, how to extract information from construction blueprints and drawings, good housekeeping habits, and material handling on the construction site. This course is divided into six modules. Each module must be successfully completed. May be repeated twice for credit. (Alternative: CTT F101; CTT F102; CTT F103; CTT F104.) (2.5+1.5)

CTT F101 **Basic Construction Safety**
1 Credit Offered As Demand Warrants
Introduction to basic construction safety using OSHA approved standards. Focus is on safe work practices and procedures, the proper inspection of safety equipment before use and the proper use of safety equipment. (Alternative to CTT F100 when taken with CTT F102; CTT F103; CTT F104.) (1+0.5)

CTT F102 **Introduction to Hand and Power Tools**
1 Credit Offered As Demand Warrants
Introduction to basic hand and power tools used in construction and maintenance and the importance of their care and use. Valuable safety information for each type of tool is discussed. Understanding proper usage helps trainees to prevent accidents. Some specialty tools used by different crafts are also introduced. (Alternative to CTT F100 when taken with CTT F101; CTT F103; CTT F104.) ***Prerequisites: CTT F101 or permission of instructor.*** (0.5+1)

CTT F103 **Introduction to Blueprint Reading**
1 Credit Offered As Demand Warrants
Introduction to basic blueprint terms, components and symbols. Different types of construction drawings commonly used on job sites and why each type of drawing is important will be presented. Standardized information contained on blueprints such as identification, revision status, symbols, project titles, dimension and scale will be covered. (Alternative to CTT F100 when taken with CTT F101; CTT F102; CTT F104.) ***Prerequisites: CTT F102 or permission of instructor.*** (1+1)

CTT F104 **Basic Communication and Employability Skills**
2 Credits Offered As Demand Warrants
Techniques for communicating effectively with co-workers and supervisors. Includes critical thinking and problem-solving skills and reviews effective relationship skills, effective presentation and key workforce issues such as sexual harassment, stress and substance abuse. (Alternative to CTT F100 when taken with CTT F101; CTT F102; CTT F103.) ***Prerequisites: CTT F103 or permission of instructor.*** (2+0)

CTT F106 **Construction Mathematics**
3 Credits Offered As Demand Warrants
Introduction to basic mathematical procedures commonly used in the construction and maintenance crafts. Includes multiplication, subtraction, addition, division, working with fractions and measuring areas, volume and capacity of shapes. (3+0)

CTT F110 **Residential Carpentry — Level I**
8.5 Credits Offered As Demand Warrants
Introduction to basic materials and framing techniques used in the construction trades. Includes an orientation, introduction to materials and advanced tools used in the trades. Includes techniques used in framing a structure and to exterior doors and windows commonly installed on construction projects and their proper installation. This course is divided into seven modules. Each module must be successfully completed. (Alternative: CTT F111; CTT F112; CTT F113; CTT F114.) ***Prerequisites: CTT F100 or permission of instructor.*** (5+7)

CTT F111 **Materials and Tools Used in the Trade**
2.5 Credits Offered As Demand Warrants
Examines the sources and uses of various softwoods and hardwoods, the grading system for lumber and plywood, composition and uses of various engineered sheet materials and laminated lumber products and the many kinds of fasteners and adhesives used with wood and masonry construction. Expands on the hand and power tool information provided in the construction technology core and introduces the carpentry trainee to additional tools used in the carpentry trade. (Alternative to CTT F110 when taken with CTT F112; CTT F113; CTT F114.) ***Prerequisites: CTT F100 or permission of instructor.*** (2+1)

CTT F112 **Floor Systems, Wall and Ceiling Framing**
2 Credits Offered As Demand Warrants
Focuses on framing basics. Includes the procedures for laying out and constructing a wood floor using common lumber as well as engineered building materials, procedures for laying out and framing walls and ceilings, roughing in doors and window openings, construction corners and partition Ts, bracing walls and ceilings, and applying sheathing. (Alternative to CTT F110 when taken with CTT F111; CTT F113; CTT F114.) ***Prerequisites: CTT F111 or permission of instructor.*** (1+2)

CTT F113 **Roof Framing, Windows, and Exterior Doors**
2 Credits Offered As Demand Warrants
Describes the various kinds of roofs and instructions for laying out rafters for gable roof, hip roof and valley intersections. Includes both stick built and truss built roofs, various types of windows, skylights, exterior doors, and instructions for installing weather stripping and lock sets. (Alternative to CTT F110 when taken with CTT F111; CTT F112; CTT F114.) ***Prerequisites: CTT F112 or permission of instructor.*** (1+2)

CTT F114 **Introduction to Concrete Materials and Forms**
2 Credits Offered As Demand Warrants
Introduction to various cements and other materials which when mixed form various types of concrete. Includes concrete volume estimates, concrete tests, concrete curing methods, reinforcement materials such as rebar, bar supports and welded-wire fabric and tasks in the construction of foundations and flat work. (Alternative to CTT F110 when taken with CTT F111; CTT F112; CTT F113.) ***Prerequisites: CTT F113 or permission of instructor.*** (1+2)

CTT F115 **Residential Carpentry — Level II**
12 Credits Offered As Demand Warrants
This course builds upon the skills learned in CTT F110. Includes methods and techniques used to locate structures and install exterior siding and related element protection. Various types of roofing and installation of those materials, types and methods of drywall and its installation and interior finish applications. This course is divided into eleven modules. Each module must be successfully completed. (Alternative: CTT F116; CTT F117; CTT F118; CTT F119.) ***Prerequisites: CTT F110 or permission of instructor.*** (6+12)

CTT F116 **Reading Plans and Site Layout — Level I**
2 Credits Offered As Demand Warrants
This course builds upon CTT F110. Introduces the principles, equipment and methods used to perform site layout tasks of distance measurements, differential leveling and the site layout responsibilities of individuals on the site. (Alternative to CTT F115 when taken with CTT F117; CTT F118; CTT F119.) ***Prerequisites: CTT F110 or permission of instructor.*** (1+2)

CTT F117 **Exterior Finish and Moisture Protection**
2 Credits Offered As Demand Warrants
Introduction to materials and installation techniques used in various types of siding. Includes the installation procedures and basic requirements for insulation, moisture control and ventilation. (Alternative to CTT F115 when taken with CTT F116; CTT F118; CTT F119.) ***Prerequisites: CTT F116 or permission instructor approval.*** (1+2)

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CTT F118 Roofing, Stairs and Metal Studs Applications
3 Credits Offered As Demand Warrants
Introduction to materials and installation techniques for a number of basic types of roofing. Includes installation techniques of stairs and metal studs. (Alternative to CTT F115 when taken with CTT F116; CTT F117; CTT F119.) ***Prerequisites: CTT F117 or permission of instructor.*** (2+2)

CTT F119 Drywall and Interior Finish Applications
5 Credits Offered As Demand Warrants
Introduction to materials, tools and procedures used to install and finish gypsum drywall on walls and ceilings and to correct drywall finishing problems. Includes installation of various types of doors and their related hardware in several types of walls, materials, tools and procedures used to lay out, install, and maintain suspended ceilings and the different types of trim. (Alternative to CTT F115 when taken with CTT F116; CTT F117; CTT F118.) ***Prerequisites: CTT F118 or permission of instructor.*** (2+6)

CTT F120 Introductory Skills for the Crew Leader
1 Credit Offered As Demand Warrants
Basic leadership skills required for the job. Practicing effective human relations skills: communicating, listening, motivating workers, solving conflict, scheduling, safety and resource control that are an essential part of the crew leader's job. ***Prerequisites: CTT F100 or permission of instructor.*** (1+0)

CTT F121 Train the Trainer
2 Credits
Journeypersons are needed to transfer their skills to younger workers and this program will provide the skilled person with an intense series of discussions related to teaching strategies, classroom management and leadership, group dynamics and evaluation of training. Program completers may qualify for adjunct status with UAF. ***Prerequisites: Skilled journeyperson in specific skill area or permission of instructor.*** (2+0)

CTT F130 Introduction to Facilities Maintenance
1 Credit Offered As Demand Warrants
Provides students with basic safety instruction of hand and power tools and chemicals used in the facilities maintenance occupation in accordance with Federal OSHA regulations. The students will be instructed in the safe work practices of Personal Protective Equipment (PPE) requirements which support awareness of job-site hazards and protections, such as lockout/tag out and hazardous communications. (0+0)

CTT F131 Interior Repairs: Drywall, Woodwork Trim, Window Replacement
1 Credit Offered As Demand Warrants
Provides students with basic theory of drywall repair (removing, replacing, texturing and painting). Special tools will be used in applying trim to ceilings, walls and door frames. Instruction will be given in selecting, cutting and fastening trim, removing and replacing damaged windows, replacing opening and closure mechanisms and in reapplying trims and paintings. (0+0)

CTT F132 Flooring Installation: Vinyl, Wood and Parquet
1 Credit Offered As Demand Warrants
Introduces students to concepts and practical applications of installing vinyl, wood and parquet floor coverings. Students will learn how to install underlayment, vinyl flooring tiles, trim and baseboard components, as well as, use special tools for correctly installing parquet flooring with subflooring installation. (0+0)

CTT F133 Cabinet Installation with Countertops
1 Credit Offered As Demand Warrants
Provides students with basic concepts of installing cabinets with countertops and identify different types of cabinet construction (stock, semi-custom and custom built). Students will be shown be different types of wood products and be introduced to special tools. Face-to-face instruction and practical application of different techniques of installing base cabinets and top or wall cabinets will be shown. (0+0)

CTT F134 Garbage Disposal Installation
1 Credit Offered As Demand Warrants
Inform students of the basic knowledge of installing a garbage disposal unit in a basic kitchen cabinet. Students will learn how to use special tools in connecting drain and waste piping and venting systems from a house unit. Students will review safety issues related to the proper handling of plumbing hand and power tools in the installation process. (0+0)

CTT F135 Boiler Troubleshooting and Burner Repair
2 Credits Offered As Demand Warrants
Focuses on the basic components of boilers and burners used in industry for heating residential and commercial properties. Key concepts and strategies related to the process and safety operations of combustion, boiler thermodynamics, control systems, fuel pumps, ignition systems, draft and venting principles and boiler operation according to Alaska code. Upon completion of the training each student may sit for the State of Alaska Boiler Class 4 License. (0+0)

CTT F136 Landscaping and Horticulture
2 Credits Offered As Demand Warrants
Introduces students to the process/procedure of preparing and landscaping a grounded area. Students will be introduced to concepts of placement of appropriate plants and vegetation, maintenance of edged and mowed lawn area, weed and fertilization control and watering schedules. (0+0)

CTT F137 Appliance Troubleshooting and Repair
2 Credits Offered As Demand Warrants
Provides students with conceptual and practical applications in troubleshooting and repairing appliances. Students will be instructed in diagnostic skills that support repairing and replacing components in various equipment such as refrigerators, washing machines, dishwashers, clothes dryer and oven and cook-tops. ***Prerequisite: Instructor approval.*** (0+0)

CTT F138 Troubleshooting HVAC Systems
2 Credits Offered As Demand Warrants
Provides conceptual and practical applications for students wishing to become a HVAC technician. Topics will explore diagnosis of equipment problems in operation, testing and adjusting conventional and electronic thermostats. Students will also receive instruction on the operation of common electrical, electronic and pneumatic circuits used to control HVAC systems. ***Recommended: Instructor approval if student has not taken CTT courses.*** (0+0)

CTT F150 Plumbing — Level I
4 Credits Offered As Demand Warrants
Introduction to basic plumbing techniques, math, hand and power tools, extraction of information from construction drawings and materials used in the plumbing trade. This course is divided into ten (10) modules. Each module must be successfully completed. (Alternative: CTT F151; CTT F152; CTT F153; and CTT F154.) ***Prerequisites: CTT F110 or permission of instructor.*** (3+2)

CTT F151 Introduction to Plumbing Tools and Drawings
1 Credit Offered As Demand Warrants
Introduction to a plumber's basic hand and power tools, their care and maintenance, and safety procedures. Includes the basics of reading plumbing blueprints and drawings and specific plumbing drawings such as isometric and oblique pictorial drawings, orthographic drawings and schematic drawings. (Alternative to CTT F150 when taken with CTT F152; CTT F153; and CTT F154.) ***Prerequisites: CTT F110 or permission of instructor approval.*** (1+0.5)

CTT F152 Introduction to Plumbing Math
1 Credit Offered As Demand Warrants
A review of basic math skills and how those skills relate to pipe measuring and fitting techniques. Introduction to pipe measuring and the basics of figuring simple offsets. (Alternative to CTT F150 when taken with CTT F151; CTT F153; and CTT F154.) ***Prerequisites: CTT F151 or permission of instructor.*** (1+0)

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CTT F153 **Plastic and Copper Pipe and Fittings**
1 Credit Offered As Demand Warrants
Introduction to the various types of plastic and copper pipe used in the plumbing industry. Includes various methods of joining plastic and copper pipe and a variety of fittings commonly found in commercial and residential dwellings. (Alternative to CTT F150 when taken with CTT F151; CTT F152; CTT F154.) ***Prerequisites: CTT F152 or permission of instructor.*** (0.5+1)

CTT F154 **Fixtures, Faucets and Venting Systems**
1 Credit Offered As Demand Warrants
Covers the various types of fixtures plumbers install, including sinks, bathtubs, water closets, garbage disposals, dishwashers and mop basins. An overview of the drain, waste and vent system from inside the building, where the liquid drains into pipes, to the sewer and waste treatment plants. (Alternative to CTT F150 when taken with CTT F151; CTT F152; CTT F153.) ***Prerequisites: CTT F153 or permission of instructor.*** (0.5+1)

CTT F155 **Plumbing — Level II**
8 Credits Offered As Demand Warrants
Introduction to basic plumbing techniques, math, hand and power tools, extraction of information from construction drawings and materials used in the plumbing trade. This course is divided into thirteen modules. Each module must be successfully completed. Generally, each will have two components, a written exam and a hands-on competency test. (Alternative: CTT F156; CTT F157; CTT F158; CTT F159.) ***Prerequisites: CTT F150 or permission of instructor.*** (4.5+7)

CTT F156 **Intermediate Math and Reading Commercial Drawings**
2 Credits Offered As Demand Warrants
Techniques for calculating simple, rolling and parallel offsets. Includes how to interpret and use civil, architectural, structural, mechanical, plumbing and electrical drawings when installing plumbing systems. (Alternative to CTT F155 when taken with CTT F157; CTT F158; CTT F159.) ***Prerequisites: CTT F150; CTT F152; or permission of instructor.*** (1+2)

CTT F157 **Installing and Testing DWV Piping and Other Drains**
2 Credits Offered As Demand Warrants
Examination of the installation process for drain, waste and vent (DWV) piping and the procedures for locating DWV stacks and fixtures, installing and connecting DWV stacks using hangers and supports, determining grade and testing and inspecting plumbing installations. Includes the proper techniques for locating, installing and connecting roof, floor and area drains according to code. (Alternative to CTT F155 when taken with CTT F156, CTT F158, CTT F159.) ***Prerequisites: CTT F156 or permission of instructor.*** (1+2)

CTT F158 **Valves, Faucets and Fixtures: Installation and Testing**
3 Credits Offered As Demand Warrants
Examination of the many types and uses of valves, and valve repair and replacement. Includes how to locate, connect and test water supply piping while observing safety guidelines and the installation of basic plumbing fixtures, including bathtubs, shower stalls, lavatories, sinks, water closets, urinals, as well as their valves and faucets. Students will learn about gas-fired, electric, solar and indirect water heaters and review the proper installation and testing techniques. Includes troubleshooting and repair of fixtures, valves and faucets in accordance with safety guidelines. (Alternative to CTT F155 when taken with CTT F156; CTT F157; CTT F159.) ***Prerequisites: CTT F157 or permission of instructor.*** (2+2)

CTT F159 **Fuel Gas Systems**
1 Credit Offered As Demand Warrants
Introduction to the various types of fuel gas and fuel oil systems. Includes characteristics of the different fuels and system installation and appliances. (Alternate to CTT F155 when taken with CTT F156; CTT F157; CTT F158.) ***Prerequisites: CTT F158 or permission of instructor.*** (0.5+1)

CTT F160 **Photovoltaic Systems — Part I**
5 Credits Offered As Demand Warrants
This course is a practical introduction to electric power generation through photovoltaic cells. During this course the student will build a solar panel to understand its operation, installation and maintenance. ***Prerequisites: CTT F106 or permission from instructor.*** (4+2)

CTT F161 **Photovoltaic Systems — Part II**
5 Credits Offered As Demand Warrants
This course covers practical methods of installing photovoltaic systems in residential settings. The students will also learn basic troubleshooting techniques. ***Prerequisites: CTT F160 or permission of the instructor.*** (4+2)

CTT F170 **Residential Electrical — Level I**
9 Credits Offered As Demand Warrants
Introduction to basic electrical techniques, electrical theory, and extraction of information from construction drawings, tools, and materials used in the electrical trades. Course is divided into twelve modules. Each module must be successfully completed. (Alternative: CTT F171; CTT F172; CTT F173; CTT F174.) ***Prerequisites: CTT F115 or permission of instructor.*** (8+2)

CTT F171 **Electrical Safety and Electric Theory**
2 Credits Offered As Demand Warrants
Course covers the safety rules as applied to handling and working with electrical systems and circuits. Includes the required OSHA mandated lockout/tag out procedure, basic electric theory and circuit calculations involving the application of Ohm's and Kirchoff's laws. The student is made aware of precautions to take for various electrical hazards found on the job site. (Alternative to CTT F170 when taken with CTT F172; CTT F173; CTT F174.) ***Prerequisites: CTT F115 or permission of instructor.*** (2+0)

CTT F172 **Alternating Current, Electrical Test Equipment and the NEC**
2 Credits Offered As Demand Warrants
Introduction to the principles of alternating current and the operation and applications of various types of electrical test equipment. Includes National Electrical Code. (Alternative to CTT F170 when taken with CTT F171, CTT F173; CTT F174.) ***Prerequisites: CTT F171 or permission of instructor.*** (2+0)

CTT F173 **Raceways, Boxes, Fittings, and Hand Bending**
2.5 Credits Offered As Demand Warrants
Introduction to various types of raceways, boxes and fittings, and applications and installation procedures for various types of fasteners and anchors. Also covered are methods and procedures used in cutting, bending, and reaming conduit. (Alternative to CTT F170 when taken with CTT F171; CTT F172; and CTT F174.) ***Prerequisites: CTT F172 or permission of instructor.*** (2+1)

CTT F174 **Boxes and Fittings, Conductors, Terminations and Splices**
2.5 Credits Offered As Demand Warrants
Introduction to methods and procedures used in the selection and installation of outlet boxes and fittings. Topics include various types of conductors, how conductors are rated by the NEC, and the different methods used for pulling conductors through conduit runs. (Alternative to CTT F170 when taken with CTT F171; CTT F172; CTT F173.) ***Prerequisites: CTT F173 or permission of instructor.*** (2+1)

CTT F175 **Residential Electrical — Level II**
8 Credits Offered As Demand Warrants
Introduction to basic electrical techniques, electrical theory and extraction of information from construction drawings, tools and materials used in the electrical trades. This course is divided into ten modules. Each module must be successfully completed. (Alternative: CTT F176; CTT F177; CTT F178; CTT F179.) ***Prerequisites: CTT F170 or permission of instructor.*** (4+8)

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CTT F176 **Electrical Blueprint Reading, Wiring Devices and Raceway, Box and Fitting Fill**
2 Credits Offered As Demand Warrants
Introduction to electrical blueprint reading. Includes methods and procedures used when sizing and selecting wiring devices. (Alternative to CTT F175 when taken with CTT F177; CTT F178; CTT F179.) ***Prerequisites: CTT F170 or permission of instructor.*** (1+2)

CTT F177 **Wiring: Commercial and Residential and Grounding**
2 Credits Offered As Demand Warrants
Introduction to grounding and various types of switches and receptacles used in commercial and industrial wiring. (Alternative to CTT F175 when taken with CTT F176; CTT F178; CTT F179.) ***Prerequisites: CTT F176 or permission of instructor.*** (1+2)

CTT F178 **Circuit Breakers, Fuses and Electric Services**
2 Credits Offered As Demand Warrants
Introduction to methods and procedures used in selection and installation of circuit breakers and fuses and in the installation of electric services. (Alternative to CTT F175 when taken with CTT F176; CTT F177; CTT F179.) ***Prerequisites: CTT F177 or permission of instructor.*** (1+2)

CTT F179 **Lighting Fixtures and Related Components**
2 Credits Offered As Demand Warrants
Covers methods and procedures used in the handling and installation of different types of lamps and lighting fixtures and builds on the information and lighting principles previously covered. Topics include information on the operation of specific types of lamps and related lighting fixtures and circuit controls. (Alternative to CTT F175 when taken with CTT F176; CTT F177; CTT F178.) ***Prerequisites: CTT F178 or permission of instructor.*** (1+2)

CTT F199 **Student Practicum I**
1-3 Credits
Provides the student the opportunity to practice and develop the skills learned in the classroom. Skills will be developed under the guidance of journeyman and/or qualified personnel on the job site. Course may be repeated twice for a total of three credits. ***Prerequisites: CTT F115 or permission of instructor*** (0+2-6)

CTT F299 **Student Practicum II**
1.5 Credits Offered As Demand Warrants
Provides the student the opportunity to practice and develop the skills learned in the classroom. Skills will be developed under the guidance of journeyman and/or qualified personnel on the job site. ***Prerequisites: CTT F155 or permission of instructor.*** (0+3)

CTT F299P **Student Practicum II**
1.5 Credits Offered As Demand Warrants
Provides the student the opportunity to practice and develop the skills learned in the classroom. Skills will be developed under the guidance of journeyman and/or qualified personnel on the job site. Graded Pass/Fail. ***Prerequisites: CTT F155 or permission of instructor.*** (0+3)

COUNSELING

COUN F615 **Foundations of Counseling**
3 Credits Offered Fall, As Demand Warrants
Introduction to the philosophies, organization, patterns and techniques that aid counselors in preparing clients for responsible decision-making in modern society. ***Prerequisites: Admittance to Counseling program; or permission of instructor.*** (3+0)

COUN F623 **Counseling Theories and Applications I**
3 Credits Offered Fall, As Demand Warrants
A survey of the major theoretical systems of counseling and psychotherapy combined with a laboratory experience focused on building microskills in counseling. Specific application of theoretical principles will be investigated, analyzed and described. ***Prerequisites: Admittance to Counseling program; or permission of instructor.*** Cross-listed with PSY F660. (3+2)

COUN F628 **Child and Adolescent Development**
3 Credits Offered Fall
Focus on developmental processes and sequences of change that children experience within each developmental domain from birth through adolescence. ***Prerequisites: Admittance to Counseling program; or permission of instructor.*** (3+0)

COUN F629 **Counseling Interventions**
3 Credits Offered Spring
Course examines various intervention strategies/techniques for working with individuals across the lifespan in a variety of situations. Attention is placed on assisting children, youth and adults in accomplishing developmental tasks appropriate to their psychosocial growth. ***Prerequisites: COUN F623; admittance to the Counseling program; or permission of instructor.*** (3+0)

COUN F630 **Appraisal for Counselors**
3 Credits Offered Fall; As Demand Warrants
Introduction to the kinds of assessment information school and community counselors utilize in the assessment process. ***Prerequisites: COUN F623; admittance to Counseling program; or permission of instructor.*** (3+0)

COUN F632 **Career Development**
3 Credits Offered Fall
An introduction to the theories of career development, career choices and how to translate theory into practice. Emphasis will be on career education development and the utilization of information resources for facilitating the career choice decision-making process. ***Prerequisites: COUN F615; admittance to Counseling program; or permission of instructor.*** (3+0)

COUN F634 **Practicum in Individual Counseling**
3 Credits Offered Spring, Summer; As Demand Warrants
Supervised practice in basic counseling skills and techniques. Supervised work with one-on-one counseling relationships. Actual practice in listening, problem identification, goal setting and session management. ***Prerequisites: COUN F623; admittance to Counseling program; permission of instructor.*** (2+7)

COUN F636 **Internship I**
3 Credits
Supervised practice in school or community setting. Focus on directed practice of particular skills relevant to the counselor's role. Weekly seminars will cover actual and role playing situations providing opportunities to operationalize theory in counseling, interventions and ethical issues. (3 credits required for elementary internship; 3 credits required for secondary internship; 3 credits required for community internship; students may take all three.) Special fees apply. ***Prerequisites: COUN F634; admittance to Counseling program; permission of instructor.*** (2+7)

COUN F638 **Adult Development**
3 Credits Offered Spring As Demand Warrants
An overview of physical, cognitive, personality and social development across the adult life span, from high school graduation through death. Major theories and research findings in the field of adult development are explored with an emphasis on examining how individuals progress through a series of predictable stages during their lifetime. ***Prerequisites: COUN F615; admittance to Counseling program; or permission of instructor.*** (3+0)

COUN F646 **School Counseling**
3 Credits Offered Fall
Topics related to the role of the school counselor such as consultation, career guidance and culturally appropriate assessment. ***Prerequisites: COUN F623;***

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admittance to Counseling program; or permission of instructor. Cross-listed with PSY F646. (3+0)

COUN F647 Professional Ethics
3 Credits Offered Fall
The ethical standards of the American Psychological Association and the American Counseling Association will be examined, discussed and compared. Students will be provided with opportunities to apply these general principles to specific cases. Students will be expected to demonstrate a knowledge of the principles of these ethical codes and an ability to apply them to their reality based manifestations. Also available via Independent Learning. ***Prerequisites: Admittance to Counseling program, or permission of instructor.*** Cross-listed with PSY F647. (3+0)

COUN F650 Cross-Cultural Psychopathology
3 Credits Offered Fall
An overview of contemporary perspectives on child and adult psychological disorders from the perspective of cultural psychology. Fundamentals of therapeutic interviewing. Training in use of the DSM-IV diagnostic system. Examination of the role of culture, ethnicity, gender and social class in symptom formation and the experience of illness, and critical examination of these issues in clinical application of the DSM-IV. Training in DSM-IV cultural formulation. ***Prerequisites: PSY F345; COUN F623; admittance to the Counseling program; or permission of instructor.*** Cross-listed with PSY F650. (3+0)

COUN F660 Cross-Cultural Counseling
3 Credits Offered Spring; As Demand Warrants
An examination of cultural and ethnic variables in human nature and their effect on the counseling process. Specific focus will be placed on the nature and function of culture, cultural variables in the context of the human experience, universal and culture specific aspects of the counseling process, barriers to effective cross-cultural counseling, specific ethnic and cultural considerations, and methods of intellectual training with special emphasis on Alaskan applications. ***Prerequisites: Admittance to the Counseling program; or permission of instructor.*** Cross-listed with PSY F661. (3+0)

COUN F666 Family and Network Therapy
3 Credits Offered Spring
Survey of concepts and theories of function and dysfunction in the area of couples and families as social networks. In addition, it provides an introduction to the skills necessary for one who would intervene in these systems. ***Prerequisites: COUN F623; admittance to the Counseling program; or permission of instructor.*** Cross-listed with PSY F666. (3+0)

COUN F674 Group Counseling
3 Credits Offered Spring, Alternate Summer, As Demand Warrants
Kinds and types of groups with emphasis on methods, problems and needed skills in working with groups in a counseling situation. ***Prerequisites: COUN F623; admittance to Counseling program; permission of instructor.*** Cross-listed with PSY F674. (3+0)

COUN F690 Internship II
3-9 Credits
Opportunity to perform all the activities that a regularly employed counselor would be expected to perform in a school or community setting. At the completion of the internship the student will be able to demonstrate knowledge and skills needed to administer school and/or community counseling services. (3 credits required for elementary internship; 3 credits required for secondary internship; 3 credits required for community internship; student may take all three.) Special fees apply. ***Prerequisites: COUN F634; COUN F636; permission of instructor.*** (0+3-9)

CROSS-CULTURAL STUDIES

CCS F602 Cultural and Intellectual Property Rights
3 Credits Offered Spring
Examines issues associated with recognizing and respecting cultural and intellectual property rights with respect to the documentation, publication and display of knowledge, practices, beliefs and artifacts of cultural traditions. Appropriate research principles, ethical guidelines and legal protections will be reviewed for their application to cross-cultural studies. ***Prerequisites: Graduate standing or approval of the instructor.*** (3+0)

CCS F603 Field Study Research Methods
3 Credits
Focus on techniques for conducting both quantitative and qualitative field research. Particular emphasis on considerations for conducting field research in cross-cultural settings. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with ED F603. (3+0)

CCS F604 Documenting Indigenous Knowledge
3 Credits Offered Fall
A thorough grounding in research methodologies and issues associated with documenting and conveying the depth and breadth of indigenous knowledge systems and their epistemological structures. Includes a survey of oral and literate data-gathering techniques, a review of various modes of analysis and presentation, and a practical experience in a real-life setting. ***Prerequisites: Graduate standing or approval of the instructor.*** Cross-listed with: ED F604. (3+0)

CCS F608 Indigenous Knowledge Systems
3 Credits Offered Fall
A comparative survey and analysis of the epistemological properties, world views and modes of transmission associated with various indigenous knowledge systems. Emphasis on knowledge systems practiced in Alaska. ***Prerequisites: Graduate standing or approval of instructor.*** Cross-listed with RD F608; ED F608; ANL F608. (3+0)

CCS F610 Education and Cultural Processes
3 Credits Offered As Demand Warrants
Advanced study of the function of education as a cultural process and its relation to other aspects of a cultural system. Students will be required to prepare a study in which they examine some aspect of education in a particular cultural context. Also available via Independent Learning. Cross-listed with ED F610. (3+0)

CCS F611 Culture, Cognition and Knowledge Acquisition
3 Credits Offered Fall
An examination of the relationship between learning, thinking and perception in multicultural contexts. Particular emphasis will be on the implications of these relationships for schooling. Content will focus on cultural influences on perception, conceptual processes, learning, memory and problem solving. Content will also reflect concern for practical teaching problems. Cross-listed with ED F611. (3+0)

CCS F612 Traditional Ecological Knowledge
3 Credits Offered Spring
Examines the acquisition and utilization of knowledge associated with long-term inhabitation of particular ecological systems and adaptations that arise from the accumulation of such knowledge. Attention will be given to the contemporary significance of traditional ecological knowledge as a complement to academic fields of study. ***Prerequisites: Graduate standing or approval of the instructor.*** Cross-listed with RD F612. (3+0)

CCS F613 Alaska Standards for Culturally Responsive Schools
3 Credits Offered As Demand Warrants
Guidelines, rationale and resources for adapting educational policies, programs and practices to better address the cultural well-being of the students and

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communities they serve. Content will be grounded in the "Alaska Standards for Culturally Responsive Schools" including standards for students, teachers, curriculum, schools and communities. Cross-listed with ED F613. (3+0)

CCS F616 Education and Socioeconomic Change
3 Credits Offered As Demand Warrants
An examination of social change processes, particularly in relation to the deliberate development of new institutions and resulting forms of new consciousness. Emphasis is placed on the role of education and schooling in this development dynamic. Also available via Independent Learning. Cross-listed with: ED F616 (3+0)

CCS F620 Critiquing Indigenous Literature for Alaska's Children
3 Credits Offered As Demand Warrants
Provides educators with a comprehensive framework for reviewing literature that is written about and for Alaska's indigenous children. An in-depth look at how children's literature influences the image of the indigenous children of Alaska and provides a foundation for selecting curriculum materials that accurately represent and address the cultural context of the students and communities they serve. This is a distance education/audio-conference course. ***Prerequisites: Graduate standing, teaching certificate, or approval of the instructor.*** (3+0)

CCS F631 Culture, Community and the Curriculum
3 Credits Offered Fall
Salient issues involved with the development of effective programs of instruction in small schools, including foundational design, conceptual models, organizational strategies, technical skills, current issues and trends, and their implications and application to the environment of rural Alaska. Also available via Independent Learning. Cross-listed with: ED F631 (3+0)

CCS F690 Seminar in Cross-Cultural Studies
3 Credits Offered As Demand Warrants
Investigation of current issues in cross-cultural contexts. Opportunity for students to synthesize their prior graduate studies and research. Seminar is taken near the terminus of a graduate program. ***Prerequisites: Advancement to candidacy and permission of student's graduate committee.*** Cross-listed with ANL F690; ED F690; RD F690. (3+0)

CULINARY ARTS

CAH F060 Basic Techniques of Cooking I
3 Credits
Basics in the culinary arts field designed for students with special needs. Special fees apply. ***Prerequisites: Permission of instructor.*** (1.5+6)

CAH F070 Basic Techniques of Cooking II
6 Credits
An open ended course providing an appropriate learning sequence for students with special needs. Special fees apply. ***Prerequisites: Permission of instructor.*** (3+12)

CAH F101 Introduction to the Culinary Field
1 Credit
Provides an overview of the many facets of the food industry and begins the student portfolio. Students will learn culinary related math concepts; topics include basic math principles, weights and measures, recipe conversion and baking formulas. These lessons will be used throughout the culinary program. (1+3)

CAH F105 Principles of Food Service I
3 Credits Offered Fall, Spring, As Demand Warrants
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. (3+0)

CAH F117 Art in Cake Icing
2 Credits
The preparation of cakes for icing and decorating. Topics include borders, clowns, flowers, leaves, pattern transfer, frozen buttercream, confectionery coating, royal icing, plus designing cakes, and rolled buttercream. Use of an airbrush, flow in techniques and tiered cake assembly covered. Graded Pass/Fail. Special fees apply. (1+2)

CAH F140 Culinary I — Principles and Techniques
4 Credits
The student learns concepts of sanitation and safety as they relate to the foodservice industry. Areas addressed include: tools, equipment, knife skills, kitchen safety, food and plate presentation, food evaluation, basic cooking principles to include moist and dry heat methods, seasonings, flavorings and aromatics, fats, emulsions, dairy products, eggs and palate development. Special fees apply. ***Prerequisite/co-requisite: CAH F101; CAH F150.*** (1+6)

CAH F141 Culinary II — Stocks, Soups and Sauces
4 Credits
Students study and apply cooking methods of scratch cookery through small batch assignments. Areas of study include stocks, thickeners, roux based sauces to include the four mother sauces, hot and cold emulsions, butter sauces, salsas, vinaigrettes, and reductions as well as soups to include cream, clear and potage soups. Special fees apply. ***Prerequisites: CAH F140; CAH F150.*** (1+6)

CAH F145 Bakery Production I
5 Credits
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. Special fees apply. (5+0)

CAH F146 Introduction to Baking and Pastry
4 Credits
Students learn to apply fundamental baking skills in preparing yeast breads, quick breads, cookies, pies, pastries, cakes, custards, creams and sauces. Students will gain confidence in their abilities while learning in a professional bakery setting. Special fees apply. ***Prerequisite/co-requisite: CAH F101; CAH F140; CAH F150.*** (1+6)

CAH F150 Food Service Sanitation
2 Credits
Designed for entry-level through supervisory personnel of food service establishments. Basic microbiology, safe food handling techniques, good hygienic practices, pest control, employee training, and the Alaska laws governing food service establishments. Upon successful completion the student can earn ServSafe Managers Certification from the National Restaurant Association Education Foundation; the course also satisfies a requirement for certification with the American Culinary Federation. (2+0)

CAH F152 Supervisory Development
2 Credits
Problems and challenges that food service supervisors deal with every day. Development of personnel management methods. (2+0)

CAH F154 Food and Beverage Service
2 Credits
Introduce students to dining room and front-of-the-house operations. Students will gain competence in dining room operation and table service techniques. Students will perform duties in the dining room of our student-run restaurant. ***Prerequisites CAH F150. Note CAH F150 may be taken concurrently.*** (0.5+3)

CAH F160 Principles of Nutrition
2 Credits
Basic principles of nutrition with emphasis on nutrients and their function in relation to human health. (2+0)

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CAH F161 Pastry Tube Art
1.5 Credits
Basic cake and food product techniques including borders, flowers, cake designing and proper use of pastry tube bags. Special fees apply. (0.5+2)

CAH F170 Gourmet Cooking
2 Credits
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. Graded Pass/Fail. Special fees apply. (2+0)

CAH F171 Gourmet Baking
2 Credits
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. Graded Pass/Fail. Special fees apply. (0.5+3)

CAH F172 Gourmet Asian Cooking
2 Credits Offered As Demand Warrants
Preparing and serving Asian dishes. Study and use of proper cooking methods will be emphasized. Students prepare and enjoy a full meal during each class session. Graded Pass/Fail. Special fees apply. (0.5+3)

CAH F174 Vegetarian Cooking
2 Credits
Preparation and service of vegetarian foods and balanced meals. Use of nourishing condiments will be explored. Recipes will include some seasonal, ethnic and gourmet foods; however the emphasis will be on preparing quick, healthful, tasty meatless meals. Graded Pass/Fail. Special fees apply. (0.5+3)

CAH F175 Protein Fabrication
3 Credits
Study focuses on the identification and fabrication of protein items to include poultry, beef, veal, pork, lamb, shellfish, and finfish. Students will be introduced to the concepts of protein cookery. Emphasis is on product fabrication to practical industry applications. Special fees apply. (1+4)

CAH F176 Heart Healthy and Diabetic Cooking
2 Credits
Demonstrations of healthy cooking using glycemic index and other heart healthy and diabetic texts, in order to encourage participants to monitor weight, control blood sugar, reduce risk of heart disease and manage type 1 and 2 diabetes. Graded Pass/Fail. Special fees apply. (0.5+3)

CAH F177 Understanding Brewing and Fermentation
1 Credit
The student will receive an introduction to the history, science and process of brewing. Focus will be on the importance of sanitation for the home brewery, brewing traditional styles with an introduction to specialty brews. Attention will be given to the pairing of beer styles to food. Graded Pass/Fail. Special fees apply. ***Prerequisites: Students must be 21 years of age to enroll.*** (0.5+1)

CAH F178 Intermediate Brewing and Fermentation
1 Credit
Emphasis in brewing will focus on the use of adjuncts and their specific purposes. The effects they have on the brewing/fermentation process will be paramount. Focus will be on the more advanced style of brewing called partial mash. We may, time and weather permitting, brew a batch from grain. All brews done in this class will make use of adjuncts and/or grains. Graded Pass/Fail. Special fees apply. ***Prerequisites: CAH F177; student must be 21 years of age to enroll.*** (0.5+1)

CAH F199 Culinary Arts Externship
2 Credits
The student will complete a 240 hour externship. Student will begin to apply their education within the industry providing genuine experience that reflects the student's career goals. The student will study in an approved establishment and will be evaluated by both the employer and the instructor. Enrollment in this class will be after completing the 2nd, 3rd or 4th semester. Special fees apply. ***Prerequisites: Departmental approval required.*** (0+0+18)

CAH F230 Menu Planning
1 Credit
The importance of the menu in various food operations. The menu is considered to be the controlling factor in both commercial and noncommercial food service operations. Using a menu as a management tool in every area of the operation from planning the facility, purchasing food items, promoting items to customers and providing excellent service to help ensure success. The student will plan and write a variety of menus. ***Recommended: CAH F140; CAH F146; CAH F150.*** (1+0)

CAH F242 Culinary III — Vegetables and Starch
4 Credits
Students study and apply cooking methods of scratch cookery through small batch assignments. Areas of study include rice and grains, potato products, wheat based products to include pastas, dumplings, beans and soy products, fruits, vegetables, salads, center-of- the plate items and sandwiches. Students will continually be given the opportunity to express themselves through the art of plate presentation and garnishing. Special fees apply. Special fees apply. ***Prerequisites: CAH F140.*** (1+6)

CAH F243 Culinary IV — A la Carte Cookery
4 Credits
Study focuses on the preparation of food items for service in a guest-centered a la carte environment. Students will work in a la carte stations to include salads, broiler, saute, expediter, and tournant. Line cooking skills for fine dining as well as time budgeting and management will be emphasized. Students will gain proficiency in the areas of kitchen sense, mise en place, and hustle. An increased focus on the concepts of food presentation is emphasized. Projects include menu design, research and design of dishes to include plate presentation. Students plan and prepare up-scale theme menus. Special fees apply. ***Prerequisites: CAH F141, CAH F175, CAH F242 or permission of instructor.*** (1+6)

CAH F247 Bakery Production III
5 Credits
Continuation of CAH F146 with emphasis on specialty breads, desserts, cakes, tortes and French pastries. Ability to plan and organize production, schedule and supervise other students emphasized. Special fees apply. ***Prerequisites: CAH F146 or permission of instructor.*** (5+0)

CAH F248 Intermediate Baking and Pastry
4 Credits
This course is designed to give the student an overall appreciation and increased understanding of bread and fine pastry. Students will learn to effectively produce a variety of specialty dough, pastries, and desserts such as flans, tarts, individual and miniature pastries, souffles, chocolates, plated desserts, ice cream and sugar work, tortes and mousse tortes. Special fees apply. ***Prerequisites: CAH F146, CAH F150 or permission of instructor.*** (1+6)

CAH F250 Garde Manger
4 Credits
Students study traditional upscale pantry preparation. Students practice techniques for artistic displays of hors d'oeuvres, canapé, paté, terrines and charcuterie. The student gains practical experience preparing and serving theme buffets for guests. ***Prerequisites: CAH F141, CAH F175, CAH F242.*** (1+6)

CAH F253 Storeroom Purchasing and Receiving
2 Credits
Purchasing and receiving methods and specifications in a variety of food operations are covered in this course. Students will gain exposure to purchasing specifications for a variety of foods, using general purchasing methods, requirements, procedures and ethics. (2+0)

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CAH F255 Human Resource and Supervision in Hospitality
3 Credits
Approaches for effective culinary or hospitality supervision are considered in this course. Methods of recruiting, selecting, training, and evaluating personnel are covered. Team building and conflict management concepts are examined. Skills in communication, empowerment and planning are introduced. This course fulfills a requirement of certification with the American Culinary Federation. (3+0)

CAH F256 Restaurant and Hospitality Cost Management
2 Credits
A course designed to relate principles of calculation to the food service industry. Recipe computations, food cost estimates, cash procedures, and payroll practices are studied. Practices for controlling portions, inventories and costs are explored as they affect business operations. ***Prerequisites: CAH F101.*** (2+0)

CAH F257 Introduction to Wine Appreciation
1 Credit
This is a foundation wine course with a focus on learning systematic professional tasting techniques, identifying the classic grape varietals, understanding the characteristics of wine, learning the language of wine, and beginning to identify how to pair wine with food. Proper service techniques and how to navigate an extensive wine list will also be explored. Graded Pass/Fail. Special fees apply. ***Prerequisites: Students must be at least 21 years of age to enroll.*** (0.5+1)

CAH F258 Intermediate Wine Appreciation
1 Credit
This course will focus on the study of wine from around the world with an emphasis on the similarities and differences of those regions. Consideration will be given to the influence of climate, topography, and culture along with many other factors that affect the grapes. A goal will be to identify the varietals through focused blind tastings. Focus will be on preparing the new sommelier with special attention given to selecting wines with integrity for a cellar. Costing and inventory controls will also be covered. Graded Pass/Fail. Special fees apply. ***Prerequisites: CAH F257 or permission of the instructor. Must be 21 years of age to enroll.*** (0.5+1)

CAH F259 Advanced Oenology
1 Credit Offered As Demand Warrants
The study and evaluation of the wines of France and Germany. Emphasis on the marketing production, serving and control of wine sales. Graded Pass/Fail. Special fees apply. ***Prerequisites: CAH F257; CAH F258; or permission of instructor. Must be at least 21 years of age to enroll.*** (1+0)

DENTAL ASSISTING

DA F132 Administrative Procedures for the Dental Assistant
2 Credits Offered Fall
Administrative responsibilities performed by dental assistants in dental facilities. Includes duties of the office assistant, receptionist or secretary, and insurance coordinator. Focus on reception, telephone procedures, scheduling, public relations, insurance and professionalism. ***Prerequisites: High school graduation, GED, or permission of instructor.*** (2+0)

DA F150 Dental Radiography
4 Credits
The study of film and digital radiographic techniques in the dental practice. Introduces student to radiographic anatomy and radiation physics. Includes safety in exposing, processing and mounting dental radiographs. Presents hazardous materials handling, equipment operation and maintenance. Prepares students for the Dental Assisting National Board's radiology health and safety examination. Special fees apply. (3+2)

DA F151 Dental Infection Control
2 Credits
Principles and practices of infection control in the dental office. Includes knowledge of disease, microbiology, transmission prevention and methods of compliance with OSHA and CDC regulations. Prepares students for the Dental Assisting National Boards infection control examination. (2+0)

DA F152 Dental Materials and Applications
4 Credits
Physical and chemical properties of restorative dental materials and the application of those materials. Includes properties and manipulation of gypsum material, impression materials and custom trays, basic crown and bridge procedures. Special fees apply. ***Prerequisites: HLTH F151 or may be taken concurrently.*** (2+4)

DA F153 Anatomy for Dental Assistants
3 Credits
Study of anatomy as it applies to the field of dental assisting. Includes basic body systems and an in-depth examination of dental embryology, histology, morphology and head/neck anatomy. (3+0)

DA F251 Clinical Chairside I for Dental Assistants
6 Credits
Introduction to dental assisting. Beginning skills necessary to function as a chairside dental assistant in a general dentistry practice. Emphasis on developing clinical skills in four-handed dentistry techniques. Special fees apply. ***Prerequisites: Permission of program coordinator.*** (3+6)

DA F252 Clinical Chairside II for Dental Assistants
6 Credits
Emphasizes advanced dental assisting skills necessary in general dentistry. Includes taking impressions for study models, radiography, matrix assembly, rubber dam application, assisting with the administration of local anesthetics, temporary crowns, oral health and nutrition. Includes introduction to specialty practices. Special fees apply. ***Prerequisites: HLTH F251.*** (3+6)

DA F253 Clinical Chairside III for Dental Assistants
3 Credits
Continued learning in the dental specialties including prosthodontics, endodontics, periodontics, pedodontics, orthodontics, and oral and maxillofacial surgery. Special fees apply. ***Prerequisites: HLTH F251; HLTH F252; permission of program coordinator.*** (2+2)

DA F254 Dental Assistant Practicum
4 Credits
Clinical, off-campus course for dental assisting students. Placement in general and specialty dental offices under direct supervision by participating dentist and program faculty. Includes seminars to discuss progress and experiences. Graded Pass/Fail. ***Prerequisites: HLTH F122; HLTH F132; HLTH F150; HLTH F152; HLTH F153; HLTH F234; HLTH F251; HLTH F252; HLTH F253; enrollment by special permission only.*** (1+0+20)

DENTAL HYGIENE

DH F111 Dental Anatomy, Embryology and Histology
2 Credits Offered Fall
Introduction to embryology and histology of the periodontal tissues. Includes discussion of dental accretions and cariology. Special fees apply. ***Prerequisites: Admission to the dental hygiene program or permission of department.*** (2+0)

DH F112 Techniques I for Dental Hygienists
7 Credits Offered Fall
A pre-clinical course introducing the basic dental hygiene procedures including data gathering, patient education and basic instrumentation. Emphasis is placed on skill development in basic instrumentation and infection control. Special fees apply. ***Prerequisites: Admission to the dental hygiene program.*** (3+8)

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DH F114 **Anatomy of the Orofacial Structures**
2 Credits Offered Fall
Provides students with knowledge to perform technical skills within the oral cavity, especially those relating to dental screening and record-taking. Special fees apply. ***Prerequisites: Permission of department.*** (2+0)

DH F121 **Periodontics I**
2 Credits
Introduction to periodontal disease. Emphasis is placed on recognition of periodontal disease and treatment planning. ***Prerequisites: Admission to the dental hygiene program.*** (2+0)

DH F122 **Techniques II for Dental Hygienists**
4 Credits Offered Spring
Introduces adjunctive techniques used in dental hygiene treatment. Basic manipulation of dental materials. Emphasis is placed on care of materials and restorations that are encountered intra-orally during dental hygiene treatment. Radiology lab provides opportunity to develop competence in exposing radiographs on patients under direct faculty supervision. Special fees apply. ***Prerequisites: Admission to the dental hygiene program.*** (2+4)

DH F165 **Introduction to Dental Pharmacology**
2 Credits Offered Fall
Introduction to general concepts of pharmacology, the nature of drug reactions, individual responses to drugs, principles of neuropharmacology, toxicology, anti-infective therapy, effect of drugs on cardiovascular, endocrine and other body systems. Emphasis is placed on drugs used in dentistry. ***Prerequisites: Permission of department.*** (2+0)

DH F181 **Clinical Practicum I**
4 Credits Offered Spring
Provides opportunity for the student to achieve clinical skill competency with individuals presenting themselves as periodontally healthy or with signs of gingivitis. Special fees apply. ***Prerequisites: Admission to the dental hygiene program.*** (0+0+12)

DH F182 **Clinical Seminar I**
1 Credit Offered Spring
Discussion and evaluation of clinical experiences encountered in DH F181. Emphasis is placed on review of treatment plans and case presentation. Introduces ethical and legal concerns of the dental hygiene profession. Guest speakers, patient management and teamwork are emphasized. ***Prerequisites: Admission to the dental hygiene program.*** (1+0)

DH F211 **Periodontics II**
2 Credits Offered Fall
Develops familiarity with current non-surgical and surgical techniques in the treatment of periodontal disease. Nutrition and immunology as it relates to periodontal diseases are discussed. Case presentations are made by students. ***Prerequisites: Completion of all F100-level dental hygiene classes with a C grade (2.0) or better.*** (2+0)

DH F212 **Techniques III for Dental Hygienists**
3 Credits Offered Fall
Advanced dental hygiene instruments and intra-oral techniques. Provides for discussion of patients with special needs. Special fees apply. ***Prerequisites: Completion of all F100-level dental hygiene class with a C grade (2.0) or better.*** (1+4)

DH F214 **Pathology of Oral Tissues**
2 Credits Offered Fall
Includes the signs, symptoms, contagion recognition of selected diseases of the oral cavity and systemic diseases that manifest themselves in the oral cavity. ***Prerequisites: Completion of all F100-level dental hygiene classes with a C grade (2.0) or better; or permission of department.*** (2+0)

DH F224 **Principles of Dental Health**
3 Credits Offered Spring
Provides a broad understanding of community dental health and dental epidemiology. Students develop and implement a basic community dental health project. ***Prerequisites: Completion of all F100-level dental hygiene classes with a C grade (2.0) or better.*** (2+0+3)

DH F283 **Clinical Practicum II for Dental Hygienists**
5 Credits Offered Fall
Provides opportunity to achieve clinical skill competency with individuals presenting themselves with mild to moderate periodontal disease. Conducted in a clinical setting with volunteer patients and individualized instruction. Special fees apply. ***Prerequisites: Completion of all F100-level dental hygiene classes with a C grade (2.0) or better.*** (0+0+15)

DH F284 **Clinical Seminar II**
1 Credit Offered Fall
Discussion and evaluation of clinical experiences encountered in DH F283. Emphasis is placed on review of treatment plans and case presentations of patients exhibiting mild to moderate periodontal disease. ***Prerequisites: Completion of all F100-level dental hygiene classes with a C grade (2.0) or better.*** (2+0)

DH F285 **Clinical Practicum III for Dental Hygienists**
6 Credits Offered Spring
Provides opportunity to achieve clinical skill competency with individuals presenting themselves with moderate to advanced periodontal disease. Learning occurs through student practice and individualized instruction. Special fees apply. ***Prerequisites: Completion of all F100-level dental hygiene classes with a C grade (2.0) or better.*** (0+0+18)

DH F286 **Clinical Seminar III**
1 Credit Offered Spring
Discussion and evaluation of clinical experiences encountered in DH F285. Emphasis is placed on review of treatment plans and case presentations of patients exhibiting mild to moderate periodontal disease. ***Prerequisites: Completion of all F100-level dental hygiene classes with a C grade (2.0) or better.*** (2+0)

DH F310 **Oral Pain Control for Dental Hygienists**
3 Credits Offered Fall
Examines pharmacology, armamentarium, anatomical and physiological consideration, administration techniques and potential complication of local anesthetic. Analyzes pharmacology, techniques, medical contraindications and management complications accompanying administration and monitoring of nitrous oxide. Special fees apply. ***Prerequisites: Completion of all F100-level dental hygiene classes with a C grade (2.0) or better or current Alaska licensure in dental hygiene; permission of department; current certification in cardiopulmonary resuscitation.*** (1.5+3)

DEVELOPMENTAL ENGLISH

DEVE F060 **Preparatory College Writing I**
3 Credits
Intensive work in the process of writing and revising to improve one's writing skills. ***Prerequisites: Appropriate placement test scores or permission of instructor.*** (3+0)

DEVE F068 **College Writing Skills**
1-3 Credits
Individualized instruction in written language skills. Open entry/open exit, one credit modules in spelling/vocabulary, writing and grammar usage. Enrollment in one or more modules based on diagnosed need or student decision; may be repeated. Does not fulfill degree requirements in written communications or humanities. Graded Pass/Fail. (1-3+0)

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DEVE F070 Preparatory College Writing II
3 Credits
Instruction in writing to improve students' fluency, accuracy and communication skills. Preparation for ENGL F111X. Also available via Independent Learning. ***Prerequisites: Appropriate placement test scores or permission of instructor.*** (3+0)

DEVE F109 Preparatory College Writing III
3 Credits
Strengthen preparatory college writing skills they need for ENGL F111X, including research, writing and revising, and critical reading skills. ***Prerequisites: Appropriate placement test scores or permission of instructor.*** (3+0)

DEVELOPMENTAL MATHEMATICS

DEVM F050 Prealgebra
3 Credits
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. ***Prerequisites: Appropriate placement test scores.*** (3+0)

DEVM F051 Math Skills Review
1 Credit Offered As Demand Warrants
Develops and reviews basic mathematical terminology, theory and operations as outlined by the Alaska State Mathematics Standards. Mathematics topics focus on reviewing the six basic "strands" of mathematical content: numeration, measurement, estimation and computation, function and relationship, geometry, and statistics and probability. Approaches to problem solving will emphasize the process of mathematical thinking, communication and reasoning. It is an appropriate course for those preparing for the High School Qualifying Exam in Alaska or those needing a review of basic math skills in preparation for a math placement test at UAF. May be repeated for a total of three credits. Graded Pass/Fail. (1+0)

DEVM F056 Math Fast Track: Prealgebra/Elementary Algebra Review
1 Credit Offered 3 times per year: Augustmester, Wintermester, Maymester
A 20-hour intensive review of math concepts offered prior to each semester. Covers prealgebra and elementary algebra topics to prepare qualified students to potentially improve their math course placement. Students should have a history of being successful in equivalent levels of math, although they may not recall enough information to place well on the placement test. Students who are successful in this class have the possibility of advancing through one or two semesters of development math. Graded Pass/Fail. ***Prerequisites: Placement into DEVM F050 or DEVM F060.*** (1+0)

DEVM F060 Elementary Algebra
3 Credits
First year high school algebra. Evaluating and simplifying algebraic expressions, solving first degree equations and inequalities, integer exponents, polynomials, factoring, rational expressions, equations and graphs of lines. Also available via Independent Learning. ***Prerequisites: Grade of C or better in DEVM F050; or ABUS F155, or appropriate placement test scores. Prerequisite courses and/or placement exams must be taken within one calendar year prior to commencement of the course.*** (3+0)

DEVM F061 Review of Elementary Algebra
1 Credit
Designed to assist students in reviewing material covered by DEVM F060. Individuals who have not previously taken an elementary algebra course are recommended to enroll in DEVM F060. Available via Independent Learning only. (1+0)

DEVM F062 Alternative Approaches to Math: Elementary Algebra
3 Credits
Algebraic topics. Includes operations with polynomial expressions, first- and second-degree equations, graphing, integral and relational exponents, and radicals using alternative teaching styles. ***Prerequisites: Grade of C or better in DEVM F050; or ABUS F155; or appropriate placement test scores. Prerequisite courses and/or placement exams must be taken within one calendar year prior to commencement of the course.*** (3+0)

DEVM F065 Mathematics Skills
1-3 Credits
Designed to assist students in reviewing and reinforcing course concepts covered by DEVM F050, DEVM F060, DEVM F062, DEVM F105 and DEVM F106. Consists of instruction which may include lab instruction, individual student work or group work. May be repeated. Recommended for students who need more time and help to master the material in Developmental Math courses. (1-3+0)

DEVM F066 Advanced Math Fast Track: Elementary/ Intermediate Algebra Review
1 Credit Offered 3 times per year: Augustmester, Wintermester, Maymester.
A 20-hour intensive review of math concepts offered prior to each semester. Covers elementary and intermediate algebra topics to prepare qualified students to potentially improve their math course placement. Students should have a history of being successful in equivalent levels of math, although they may not recall enough information to place well on the placement test. Students who are successful in this class have the possibility of advancing through one or two semesters of development math. Graded Pass/Fail. ***Prerequisites: Placement into DEVM F060 or DEVM F105 or DEVM F106.*** (1+0)

DEVM F071 Review of Intermediate Algebra
1 Credit
Course reviews material covered by DEVM F105. Individuals who have not taken an intermediate algebra course on the high-school level are recommended to enroll in DEVM F105. Available via Independent Learning only. (1+0)

DEVM F081 Review of Basic Geometry
1 Credit
High school geometry without formal proofs. Topics include basic definitions, measurement, parallel lines, triangles, polygons, circles, area, solid figures and volume. Available via Independent Learning only. ***Prerequisites: DEVM F060.*** (1+0)

DEVM F082 Hands-On Geometry
1 Credit
Basic concepts and uses of geometry. Emphasis on "hands-on" and applied problems. ***Prerequisites: A solid knowledge of arithmetic — no algebra required.*** (1+0)

DEVM F105 Intermediate Algebra
3 Credits
Second year high school algebra. Operations with rational expressions, radicals, rational exponents, logarithms, inequalities, quadratic equations, linear systems, functions, Cartesian coordinate system and graphing. To matriculate to MATH F107X from DEVM F105 a grade of B or higher is required. Also available via Independent Learning. ***Prerequisites: Grade of C or better in DEVM F060; or DEVM F062; or appropriate placement test scores. Prerequisite courses and/or placement exams must be taken within one calendar year prior to commencement of the course.*** (3+0)

DEVM F106 Intensive Intermediate Algebra
4 Credits
Algebraic topics. Includes exponents, radicals, graphing, systems of equations, quadratic equations and inequalities, logarithms and exponentials, and

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complex numbers using alternative teaching styles. Note: This course satisfies elective credit only. ***Prerequisites: Grade of C or better in DEVM F060; or DEVM F062; or DEVM F105; or appropriate placement test scores. Prerequisite courses and/or placement exams must be taken within one calendar year prior to commencement of the courses.*** (4+0)

DEVELOPMENTAL STUDIES

DEVS F052 Reading Enhancement
3 Credits
Intensive instruction in reading designed to increase vocabulary and comprehension skills necessary for successful reading in the content areas of college courses. Focus is on improved reading comprehension and vocabulary development. ***Prerequisites: Placement or permission of instructor.*** (3+0)

DEVS F058 Reading Skills
1-3 Credits Offered As Demand Warrants
Course emphasis is on improving reading comprehension using texts and other materials. Focus is on paragraph structure to recognize main idea, supporting details and author's purpose. Study techniques for recognizing new vocabulary. Small groups allow individually designed course of instruction to meet the needs of the students. May be repeated. Graded Pass/Fail. ***Prerequisites: Placement or permission of instructor.*** (1-3+0)

DEVS F065 Spelling Improvement
1 Credit Offered As Demand Warrants
A diagnostic/prescriptive approach for improving spelling skills. (1+0)

DEVS F066 Vocabulary Development
1 Credit Offered As Demand Warrants
Designed to increase vocabulary substantially and to provide tools for further vocabulary growth. (1+0)

DEVS F100 Introduction to Science
4 Credits
Introduction to skills needed to succeed in core science courses. Topics include scientific terminology, scientific mathematical notation, and the fundamentals of chemistry, physics and biology. Includes basic scientific lab techniques and the skills needed to learn scientific material. ***Prerequisites: Elementary algebra and college reading level.*** (3+3)

DEVS F101 Skills for College and Career Success
3 Credits
A diverse menu of study skills for the student entering the college environment. Skills include active listening, effective reading, taking usable notes, test taking, communication, time and money management. Students learn personal development skills that assist in addressing intrusive issues that impact the learning process, increasing self-esteem, and relating these skills to the classroom and later to a career. Class sessions offer diverse learning experiences. (3+0)

DEVS F102 Introduction to Distance Education
1-3 Credits Offered As Demand Warrants
A diverse menu of study skills for the student entering the distant learning college environment. Skills include: active listening, effective reading, taking usable notes, test preparation and test taking strategies, communication, and the use of technology as a study resource - all in the distance learning context. Additionally, personal development elements such as time management, working with university representatives, and accessing local resources will provide skills to maximize the learning experience and address the intrusive issues that impact the learning process. (1-3+0)

DEVS F104 University Communications
1-3 Credits Offered As Demand Warrants
Introduces the unique methods of communication required at the college level. May link with selected lecture courses. May be repeated. (1-3+0)

DEVS F105 Intensive Reading Development
3 Credits
Develops vocabulary, reading strategies, speed and comprehension needed to read, understand and retain information in college textbooks and the skills to write in essay form, about material read. ***Prerequisites: Placement or permission of instructor.*** (3+0)

DEVS F106 Speed Reading
1 Credit
Introduction to newest speed reading techniques. Development of flexible reading rates and increased comprehension and vocabulary skills. Application of techniques to study, professional and leisure reading. (1+0)

DEVS F107 Reader-Writer Workshop
3 Credits Offered As Demand Warrants
A reader-writer workshop to develop fluency in reading and writing skills for persons whose first language is not English. Intensive speaking, listening, reading and writing activities. ***Prerequisites: Placement by examination or student decision.*** (3+0)

DEVS F108 Study Skills Lab
1 Credit Offered As Demand Warrants
Improvement of study skills in areas of greatest need on an individual or small group basis in the lab or other workshop or individualized format. Topics include time and stress management, listening/note taking, library research and memory. Course may be repeated for credit when content varies. (1+0)

DEVS F110 College Success Skills
1 Credit
An introduction and overview of the diverse skills, strategies and resources available to ensure success in the college experience. Topics include study skills, time management, career planning, stress management, communication skills, test taking and personal development skills. Graded Pass/Fail. (1+0)

DEVS F111 Reading in the Mathematical Sciences
1 Credit
Will improve reading skills in math and will support students in their math class. Will provide a supplement instruction time focusing on the introduction and/or development of reading skills that will aid in solving math problems and understanding and retaining the math information delivered in the class. This course will be linked to a math course. Graded Pass/Fail. (1+0)

DEVS F112 Reading in the Natural Sciences
1 Credit
Will improve student success in their current and future natural science classes. Will provide a supplement instructional time focusing on introducing and/or developing reading skills that will aid in reading, understanding, and retaining science information delivered in the natural science lecture and lab. Skills emphasized will include identifying, organizing and prioritizing topic, main idea, and details, note taking, and using effective reading to improve test performance. Must be linked to freshman level science class. Graded Pass/Fail. (1+0)

DEVS F150 Life Work Planning
1 Credit
Planning for a satisfying career choice based on realistic assessment of self, accurate knowledge of the world of work and experience with ways to activate career plans. Enables students to evaluate potential careers and to make educational and job search plans. Graded Pass/Fail. (1+0)

DEVS F160 The Resume: Key to Success
1 Credit
Use the resume writing process to develop job seeking skills: locating the hidden market; researching job potential; learning to fill out effective applications; designing and printing a custom resume; assembling a portfolio; and developing effective interview skills. ***Recommended: DEVS F150.*** (1+0)

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DEVS F185 **Straight Thinking**
3 Credits Offered As Demand Warrants
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 presentations examined. Effective and convincing presentation of one's own ideas including formal and informal logic. (3+0)

DIESEL TECHNOLOGY

DSLT F101 **Safety Including Rigging and Lifting**
1 Credit Offered Fall
Materials covered will be the importance of and proper use ot personal protective gear and air ventilation systems; how to identify harmful chemicals in a shop atmosphere and how to use them in a safe manner; the importance of identifying the weight of an item before lifting with lifting equipment or by hand, and proper lifting procedures of heavy items when using a lifting device. Special fees apply. (1+0)

DSLT F103 **Basic Equipment and Truck Operation**
1 Credit Offered Fall
Basic operation of heavy equipment and diesel trucks to include: stating, clutching, braking, and steering procedures. Basic forklift operation to include: lifting weight, calculation and point of balance of machine versus lifting load. Special fees apply. (0.5+1.5)

DSLT F105 **Preventive Maintenance**
3 Credits Offered Fall
Perform scheduled preventive maintenance on vehicles and heavy equipment. Gain knowledge of lubricants, filters, lubrication points and proper fluid levels and understanding of what to look for when performing a visual inspection. Special fees apply. ***Prerequisites: DSLT F101; DSLT F103.*** (1.5+3)

DSLT F107 **Basic Electrical Systems and Electronic Fuel Injection**
3 Credits Offered Fall
DC voltage and amperage, fuses, circuit breakers, relays and junction boxes will be covered along with an understanding of wiring schematics and identification of and repair of lighting. Special fees apply. (1.5+3)

DSLT F123 **Heavy Duty Braking Systems**
3 Credits Offered As Demand Warrants
Braking systems for commercial trucks and heavy equipment applications; compressor testing and overhaul, relay valves, actuators, wear limits, acceptable tolerances, brake lining replacement, government regulations and pneumatic controls; evolving technologies such as anti-lock brakes. Remove and replace brake shoes, drums, hardware, S-cams and air chambers. Includes the inspection, preventive maintenance and overhaul of a commercial truck or heavy equipment braking system. Special fees apply. ***Prerequisites: DSLT F101; DSLT F103.*** (1.5+3)

DSLT F154 **Diesel Fuel Injection**
3 Credits Offered Fall
Theory and functional operation of all common diesel fuel injection systems including those produced by modern Bosch, Mack, Cummins, Caterpillar and Detroit Diesel. Direct injection and pre-combustion fuel injection systems. Testing procedures, when testing high pressure diesel injection pumps and injectors as well as removing, installing and adjusting the most common systems used in the heavy truck and heavy equipment industry. Special fees apply. (2+2)

DSLT F201 **Manual Transmissions and Differentials**
3 Credits Offered As Demand Warrants
Theory, diagnosis and repair of manual transaxles and transmissions, transfer cases, differentials, clutch assemblies, power take off units, driveshafts and axles as well as removing and installing clutches, transmissions and differentials in a truck or piece of heavy equipment. Preventive maintenance and cold weather component problems will also be covered. Special fees apply. ***Prerequisites: DSLT F101; DSLT F103.*** (1+4)

DSLT F202 **Heavy Duty Automatic Transmissions**
2 Credits Offered Spring
Theory, operation and troubleshooting of heavy duty automatic transmissions; hydraulic, electrohydraulic, pneumatic and electronic controls. Prepares the student to overhaul Allison, ZF and similar automatic transmissions. Special fees apply. (1+3)

DSLT F254 **Engine**
5 Credits Offered Fall
Understanding the two cycle and four cycle diesel engine. Performing tune-ups, as well as disassembling and reassembling a modern diesel engine commonly found in the heavy truck or heavy equipment industry. Special fees apply. ***Prerequisites: DSLT F101; DSLT F103; DSLT F105; or permission of instructor.*** (2.5+5)

DRAFTING TECHNOLOGY

DRT F101 **Introduction to Drafting**
3 Credits Offered As Demand Warrants
Introduction to basic drafting skills necessary to communicate in the building, construction, design and process technology industries for freshman-level students and for certificate or associate degree-seeking students. Limited manual drafting techniques will be used to gain basic skills and to contrast the speed and accuracy to that of computer-aided drafting (CAD). Special fees apply. (2+2)

DRT F110 **Computer Literacy for Technicians**
3 Credits Offered As Demand Warrants
Introduction to operating systems and their applications to technology. Emphasis will be placed on computer literacy for technology and industrial business applications relevant to technicians. Special fees apply. (2+2)

DRT F112 **Introduction to GIS**
3 Credits Offered As Demand Warrants
Provides drafters with a general overview of what GIS is, who uses GIS, where GIS is used, and how GIS information is obtained and assimilated. There will be a section of practical use on one of the following systems: Manifold, Autodesk MAP, or Arch View. (3+0)

DRT F115 **Graphics I**
3 Credits Offered As Demand Warrants
Study and application of methods, problems and solutions in graphic design using AutoCAD and Viz. (3+0)

DRT F121 **Construction Documents and Drawings**
3 Credits Offered As Demand Warrants
Reading and interpretation of construction documents for residential, light commercial and heavy commercial structures using conventional symbols and representation. (3+0)

DRT F123 **Uniform Building Code**
3 Credits Offered As Demand Warrants
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 principal 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. ***Recommended: Working knowledge of building systems.*** (3+0)

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DRT F140 **Architectural Drafting**
3 Credits Offered As Demand Warrants
Architectural drafting principles including site plans, foundations, floor plans, elevations, architectural sections, framing plans, area plans and graphic standards. Special fees apply. (2+2)

DRT F141 **Architectural Concepts**
2 Credits Offered As Demand Warrants
Architectural drafting concepts including basic site plans, foundations, floor plans, elevations, architectural sections, framing plans, area plans and graphic standards. Also available via Independent Learning. (2+0)

DRT F145 **Structural Drafting**
3 Credits Offered Fall
Introduces technical skills needed by structural drafters and technicians to work with structural engineers. Includes office practices, staff relationships, and structural drawing production. Develops computer-aided drafting skills in symbols, conventions, dimensioning systems, sheet organizations, code analysis and research methods for steel, wood, and reinforced concrete buildings. Special fees apply. ***Prerequisites: DRT F170 or permission of program coordinator.*** (3+0)

DRT F150 **Civil Drafting**
3 Credits Offered As Demand Warrants
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. Special fees apply. (2+2)

DRT F151 **Civil Concepts**
2 Credits Offered As Demand Warrants
Overview of civil drafting concepts and survey drafting including the plotting of traverse and surveys by bearing and distance. Also available via Independent Learning. (2+0)

DRT F155 **Mechanical and Electrical Drafting**
3 Credits Offered as Demand Warrants
Introduces technical analysis, theory, code requirements, and CAD techniques to produce construction drawings for mechanical and electrical building systems. Includes drafting conventions, drawing symbols, terminology, and research methods for residential and commercial building systems and equipment. Special fees apply. ***Prerequisites: DRT F170 or permission of program coordinator.*** (3+0)

DRT F170 **Beginning CAD**
3 Credits
Instruction in basic working knowledge of CAD software and its applications in drafting. Topics covered include an introduction to CAD software applications, basic CAD skills and tools, through plotting finished drawings. Practical applications. Special fees apply. (2+2)

DRT F210 **Intermediate CAD**
3 Credits Offered As Demand Warrants
Techniques for construction and drafting output using CAD. Emphasis will be on the construction drawings produced for a building project and the software tools used in this process. Special fees apply. ***Prerequisites: DRT F170 or permission of program coordinator.*** (2+2)

DRT F250 **Civil Drafting II — Advanced**
3 Credits Offered As Demand Warrants
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. Special fees apply. ***Prerequisites: DRT F150; DRT F151; or permission of program coordinator.*** (2+2)

DRT F260 **Drafting Internship**
1-6 Credits Offered As Demand Warrants
Supervised work experience in process organizations. Assignments will be individually arranged with cooperating organizations from the private and public sectors. A maximum of 6 credits may be earned. Special fees apply. ***Prerequisites: Permission of program coordinator.*** (0+3-18)

DRT F270 **Advanced CAD**
3 Credits Offered As Demand Warrants
Advanced areas of CAD (3-D, menu modifications and Auto lisp). Special fees apply. ***Prerequisites: DRT F170; DRT F210; or permission of program coordinator.*** (2+2)

EARLY CHILDHOOD EDUCATION

ECE F101 **Introduction to Early Childhood Profession**
3 Credits
Includes historical foundation, current issues and trends, exposure to a variety of developmentally appropriate programs, contemporary needs of children and families, the importance of being an advocate, professional standards and career opportunities, introduction to NAEYC and the code of ethical conduct. (2.75+0.5)

ECE F102 **Essentials of Parenting**
3 Credits Offered As Demand Warrants
An introductory course to help new parents with basic information and skills needed to care for young children. Includes basics of child development, infant care and relationship-building, nutrition and budgeting. May be offered through the high schools with a tech-prep agreement and applied to the early childhood degree programs as elective credit. (3+0)

ECE F104 **Child Development I: Prenatal, Infants and Toddlers** (s)
3 Credits
Foundation in child development prenatal to age 3. Includes anticipating the emerging development during the rapid growth of these critical years. Focuses on domains, theories, cultural perspectives and multiple influences on development, with an emphasis on prenatal development, healthy childbirth, the importance of relationships, and meaningful environments. Includes observation, reflection, early intervention and labs. (2.5+1)

ECE F105 **Developmentally Appropriate Practice**
1 Credit
Introduction to developmentally and culturally appropriate teaching practice in early childhood settings. Topics include basic verbal skills, inclusion, the teaching process, organizing a class, lesson planning and curriculum development. ***Note: Successful completion of this course is required prior to enrollment in any of the ECE activity classes. This class may be taken concurrently (in the same semester) with the ECE activity classes.*** (0.75+0.5)

ECE F106 **SEED Level I** (Alaska System for Early Education Development)
1 Credit Offered As Demand Warrants
An entry level overview of the Alaska System for Early Education Development (SEED). Through class instruction and guided self-study, students explore the basics of an early childhood career path. Graded Pass/Fail. (1+0)

ECE F107 **Child Development II: The Preschool and Primary Years** (s)
3 Credits
Foundation in development for the study of children ages 3-8, including developmental domains, theories, milestones and cultural influences, including indigenous and traditional practices. The emphasis is on helping students use their knowledge of child development to predict and promote optimal growth in children. Practical experiences, such as observations and laboratory participation, will be included. Recommended: ECE F104. (2.5+1)

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ECE F110 Safe, Healthy, Learning Environments
3 Credits
Establishing and maintaining safe, healthy and inclusive environments for children ages 0-8. Emphasis is on environments that are developmentally and culturally appropriate and encourage play, exploration and learning. Topics include common illnesses, preventative health care, safety aspects in indoor and outdoor settings as well as on field trips. Laws and regulations relative to course content are included. Lab required. Note: Alternative: ECE F112; ECE F113; ECE F114. (2.5+1)

ECE F111 Nutrition for Young Children
1 Credit Offered Spring
Appropriate ways to meet the nutritional needs of infants and young children, including laws, regulations and appropriate practices relative to food handling service. (1+0)

ECE F112 Healthy Environments for Young Children
1 Credit Offered Spring
Establishing and maintaining a physically and psychologically safe environment for children, including common illnesses, preventive health care and Alaska laws and regulations relating to the health of young children. Note: Alternative to ECE F110 when taken with ECE F113 and ECE F114. (1+0)

ECE F113 Safe Environments for Young Children
1 Credit Offered Spring
Establishing and maintaining a physically and psychologically safe environment for children, including safety aspects of caring for young children and Alaska laws and regulations relating to safety. Note: Alternative to ECE F110 when taken with ECE F112 and ECE F114. (1+0)

ECE F114 Learning Environments
1 Credit Offered Spring
Space, relationships, materials and routines as resources for constructing interesting, secure and enjoyable environments that encourage play, exploration and learning. Note: Alternative to ECE F110 when taken with ECE F112 and ECE F113. (1+0)

ECE F115 Responsive and Reflective Teaching
3 Credits Offered Fall
How to be ethical, responsive, productive, and well-informed practitioners in the field of early childhood. Emphasis on using traditional and local knowledge and values to inform practice, manage personnel and programs, and provide appropriate services and support to young children and their families. Includes the NAEYC Code of Ethics and NAEYC Standards. Use of observation to transform teaching and management practices. Lab required. This course combines existing courses ECE F171 (1), ECE F172 (1) and ECE F173 (1), and is comparable to ECE F170. Students should take either ECE F115 or ECE F170 or the three one-credit courses (ECE F171, F172, and F173) to meet the practicum and reflection requirement for the Certificate and AAS degree. ***Prerequisites: ECE F101; placement in ENGL F111X or higher; or permission of instructor. Recommended: Computer with adequate and appropriate software, access to printer, audio conference and internet, and fax machine as needed.*** (2+2)

ECE F117 Math Skills for Early Childhood Educators
3 Credits Offered Spring
Computation involving percentages, estimation, problem solving, reading and creating graphs and tables, data organization and interpretation. Emphasis on applications of computational skills. Cross-listed with HUMS F117. (3+0)

ECE F118 Nutrition, Health and Safety
3 Credits Offered Fall
Establishing and maintaining physically and psychologically safe, healthy, inclusive and appropriate environments for children ages 0-8 that emphasize local and community knowledge. Includes nutrition and safe food handling, common illnesses, preventative health care and safety practices indoors and outdoors. Incorporates laws and regulations relative to course content. Lab required. This course combines existing courses ECE F111, ECE F112 and ECE F113. Students should take either ECE F118 or the three one-credit courses (ECE F111, F112 and F113) to meet the nutrition, health and safety course requirement for the Certificate and AAS degree. ***Prerequisites: ECE F101; placement in ENGL F111X or higher; or permission of instructor. Recommended: Computer with adequate and appropriate software, access to printer, audio conference and internet, and fax machine as needed.*** (2+2)

ECE F119 Curriculum I: Principles and Practices
3 Credits
Methods of creating and facilitating individually and culturally appropriate curriculum for young children. Establishing integrated, meaningful and relevant experiences applied to the area of language and literacy. Includes a balance of individual and small group experiences, child-centered curriculum and teacher-directed times, as well as transitions. Focus on emergent curriculum, active learning and play. The use of local materials and resources is incorporated. Labs required. (2.5+1)

ECE F120 Curriculum II: Thinking, Reasoning, and Discovery
3 Credits
Emphasizes culturally and developmentally appropriate curriculum and activities to advance the cognitive development of young children, with particular focus on science, math and creativity. Includes a variety of approaches to curriculum development, assessment and necessary skills for early childhood teachers. Lab required. Recommended: ECE F104, F107 and F119. NOTE: Alternative: ECE F122; F124; F125. (2.5+1)

ECE F121 Physical Activities for Young Children
1 Credit Offered Fall
Essentials of creating an environment which provides space, materials, equipment and activities to promote the physical development of children. Note: Alternative to ECE F120A when taken with ECE F105, ECE F123. (1+0)

ECE F122 Cognitive Activities for Young Children
1 Credit Offered Fall
Curriculum planning and facilitation of activities and experiences which encourage questioning, probing and problem-solving skills appropriate for different developmental levels and various learning styles of young children. Note: Alternative to ECE F120B when taken with ECE F124 and ECE F125. (1+0)

ECE F123 Language and Literature Activities for Young Children
1 Credit Offered Fall
Curriculum planning and facilitation of activities that help children acquire and use language as a means of communicating their thoughts and feelings. Includes nonverbal communication and understanding of others. Note: Alternative to ECE 120A when taken with ECE F105 and ECE F121. (1+0)

ECE F124 Creative Activities for Young Children
1 Credit
Curriculum planning and facilitation of activities which provide a variety of experiences and media that stimulate children to explore and express their creative ability. ***Note: Alternative to ECE F120B when taken with ECE F122 and ECE F125.*** (1+0)

ECE F125 Math Activities
1 Credit Offered Spring
Overview of how children construct mathematical meanings. Introduction to mathematical learning principles and experiences for children, 3 - 8 years. Note: Alternate to ECE F120B when taken with ECE F122 and ECE F124. ***Prerequisites: ECE F105 or concurrent enrollment.*** (1+0)

ECE F126 Activities for School-Age Child Care
1 Credit Offered As Demand Warrants
For child care staff who work in after-school and/or summer programs. Focus on daily activity schedules and appropriate, fun, challenging activities and projects for young school-age children. (1+0)

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ECE F127 Language and Creative Expression
3 Credits
Culturally and developmentally appropriate curriculum to promote language and literacy, creativity, and physical development. Emphasis on emergent curriculum, active learning, play observation and creative expression methodologies. Understanding of emergent literacy in young children and how to promote children's development in pre-reading activities. Emphasizes incorporating indigenous knowledge, local materials, resources, elders, artists and parents in addressing language and creative expression development in young children. Lab required. This course combines existing courses ECE F121, ECE F123 and ECE F124, and is comparable to ECE F120A. Students should take either ECE F127 or ECE F120A or the three one-credit courses (ECE F121, F123 and F124) to meet curriculum requirement for the Certificate and AAS Degree. ***Prerequisites: ECE F101; ECE F104 combined with ECE F107 or ECE F245 and ECE F220, ECE F115; placement in ENGL F111X or higher. Recommended: Computer with adequate and appropriate software, access to printer, audio conference and internet, and fax machine as needed.*** (2+2)

ECE F128 Thinking, Reasoning, and Discovery
3 Credits
Emphasizes developmentally and culturally appropriate curriculum in the area of cognition. Development and implementation of curriculum that fosters children's development in numeracy, problem solving, intellectually autonomous decision-making, and inquiry in physical and natural sciences based on the individual needs and characteristics of young children. Emphasizes the principles and practices of culturally appropriate, local knowledge and resources being used with young children. Lab required. This course combines existing courses ECE F105, ECE F122 and ECE F125, and is comparable to ECE F120B. Students should take either ECE F128 or ECE F120B or the three one-credit courses (ECE F105, ECE F122 and ECE F125) to meet curriculum requirements for the Certificate and AAS Degree. ***Prerequisites: ECE F101; ECE F104; ECE F107 or ECE F245; ECE F220; ECE F115; placement in ENGL F111X or higher. Recommended: Computer with adequate and appropriate software, access to printer, audio conference and internet, and fax machine as needed.*** (2+2)

ECE F129 Foundations for Nutrition and Physical Wellness
3 Credits Offered As Demand Warrants
Appropriate ways to meet the physical needs of infants and young children including nutrition, movement and exercise. Includes laws, regulations and appropriate practices in child nutrition as well as initiatives and trends to combat malnutrition and obesity in young children. Includes providing positive role modeling and helping families understand the essentials of good health in the home, starting with prenatal maternal health and including breastfeeding and traditional and local foods. Explores space, materials, equipment and activities to promote physical health and fitness. (2.5+1)

ECE F130 Culture, Learning and the Young Child
2 Credits Offered Fall
Ways each child within a culture comes to know, accept and take pride in himself or herself. Maintaining a culturally appropriate, open, friendly and cooperative caring relationship with each child's family. (2+0)

ECE F132 Young Child and the Family
1 Credit Offered Spring
Introduction to 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. (1+0)

ECE F135 Family Day Care Home Provider Training
1 Credit Offered As Demand Warrants
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. (1+0)

ECE F140 Positive Social and Emotional Development
3 Credits
Explores the importance of self-regulation, a strong self-concept and methods for helping children develop positive self-esteem. Focus on emotional intelligence, pro-social orientation, and social competence. Anti-bias curriculum is included. Techniques explored for working with groups of children birth-8 years old including social problem solving and developing skills for making friends. Note: Alternative: ECE F141; ECE F142; ECE F143. (2.5+1)

ECE F141 Class Management
1 Credit Offered Fall
Classroom management for teachers working with groups of children 3-8 years old. Explores skills needed to provide an environment in which children can begin to learn and practice appropriate and acceptable behaviors as individuals and as a group. Appropriate guidance including: setting limits, use of logical and natural consequences and helping children learn social problem solving, conflict resolution and negotiation. Note: Alternative to ECE F140 when taken with ECE F142 and ECE F143. (1+0)

ECE F142 Social Development of the Young Child
1 Credit Offered Fall
Explores skills that help each child feel accepted in the group. Encourages communication empathy and mutual respect among children and adults. Emphasis on methods used to promote pro-social skills such as sharing, making friends, helping children learn social problem solving, conflict resolution and negotiation. Note: Alternative to ECE F140 when taken with ECE F141 and ECE F143. (1+0)

ECE F143 Developing Positive Self-Concepts in Young Children
1 Credit Offered Fall
Explores the importance of a strong self-concept and methods for helping children develop positive 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. Note: Alternative to ECE F140 when taken with ECE F141 and ECE F142. (1+0)

ECE F170 Practicum I
1-3 Credits
A guided student teaching experience in working with a group of 0-8 year old children. Students apply skill in providing quality early care and education based on the knowledge of early childhood theories and approved practices. Assumes increasing responsibility for planning and lead teaching. Alternative: ECE F171, ECE F172, ECE F173. ***Prerequisites: ECE F101, ECE F110, ECE F120, ECE F140, ECE F245.*** (0.5+0)

ECE F171 Program Management
1 Credit Offered As Demand Warrants
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. Note: Alternative to ECE F170 when taken with ECE F172, ECE F173. (1+0)

ECE F172 Professionalism
1 Credit Offered As Demand Warrants
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. Note: Alternative to ECE F170 when taken with ECE F171, ECE F173. (1+0)

ECE F173 Reflective Teaching
1 Credit Offered As Demand Warrants
Students will develop and expand their capacities to be self-reflective teachers. Promote skills to understand and reflect on early childhood principles, theories and their teaching practices in programs for young children birth to age eight. Note: Alternative to ECE F170 when taken with ECE F171, ECE

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F172. ***Prerequisites: ECE F101; ECE F110; ECE F120A; ECE F120B; ECE F140; ECE F245.*** (0+3.5)

ECE F210 Child Development and Guidance
3 Credits Offered Spring
Guidance and discipline approaches for young children, based on an understanding of child development and of developmentally appropriate education practices. Such an understanding assists teachers and parents in addressing the cause of a behavior problem rather than the symptoms. ***Prerequisites: Placement in ENGL F111X or higher or permission of instructor.*** (3+0)

ECE F220 Curriculum III: Infant and Toddlers
3 Credits
Developmentally appropriate care and nurturance of infants and toddlers, with an emphasis on the importance of building relationships as the foundation of curriculum. Course will include segments which will prepare students to create, facilitate, and evaluate infant/ toddler curriculum utilizing relationship-based practices, knowledge of child development, and routines. Includes activities to stimulate development and learning and support communication, guidance and health. Research-based techniques and cultural practices included. Weekly practice labs (14 hours) required. ***Prerequisites: ECE F104 or permission of instructor.*** (2.5+1)

ECE F230 Introduction to Children with Special Needs
3 Credits Offered As Demand Warrants
An overview of categories of exceptionality includes hearing and visual impairments; learning, speech and language disabilities; emotional disturbances; physical and mental challenges; and the gifted and talented. ***Prerequisites: ECE F245; placement in ENGL F111X or higher; or permission of instructor.*** (3+0)

ECE F235 Screening, Assessment and Recording
2 Credits Offered As Demand Warrants
Information to help teachers of young children understand the purpose of screening. Presents use of good screening procedures. Explores the importance of assessing young children's development and provides tools and practice for recording and evaluating children's progress towards goals. Includes a variety of evaluation tools for assessing young children's development. ***Prerequisites: Placement in ENGL F111X or higher or permission of instructor. Recommended: ECE F105.*** (2+0)

ECE F240 Inclusion of Children with Special Needs (s)
3 Credits Offered Fall
Developmental, social, educational and legal (PL94-142 and 99-457) issues related to the education of young children with special needs. Includes the role of the teacher in identifying, assessing and individualizing educational programs for young children with special needs. Emphasis on including the children in the least restrictive and most responsive environments. ***Prerequisites: ECE F245; placement in ENGL F111X or higher; or permission of instructor.*** (3+0)

ECE F242 Child and Family Ecology
3 Credits Offered As Demand Warrants
Examines the influences the family has on the child, family dynamics and issues impacting families. Focus on the importance of understanding relationship building, support for families and interpersonal skill development that is culturally conducive with individual communities. Examines the ECE program's policies and procedures on families and parental involvement. Includes practical applications of course reading and content. ***Prerequisites: Placement in ENGL F111X or higher or permission of instructor.*** (2.5+1)

ECE F245 Child Development (s)
3 Credits
Examination of human relationships with and among children from a multicultural perspective. Includes physical, intellectual, emotional and social development beginning before birth through middle childhood. Requires child observations. Also available via Independent Learning. ***Prerequisites: Placement in ENGL F111X or higher or permission of instructor.*** (3+0)

ECE F249 Current Issues in Early Childhood Education
1-3 Credits Offered As Demand Warrants
Selected current issues of importance to the human services, early childhood education or child development and family studies fields. Repeatable for credit by Early Childhood Education and Child Development and Family Studies majors to a maximum of nine credits. (1-3+0)

ECE F270 Practicum II
3 Credits
An advanced guided field experience in working with a group of young children in a school or center. May include teaching in a team situation and working with families. ***Prerequisites: ECE F170; placement in ENGL F111X or higher.*** (0.5+0)

ECE F271 Practicum Seminar
1 Credit
Seminar to accompany summative practicum ECE F270. Forum for exchange of ideas and reflections on the practicum experience, reading, developmentally and culturally appropriate practices, case studies and development of professional portfolio. ***Co-requisite: ECE F270. Prerequisites: Permission of instructor. Recommended: Completion of all ECE credits towards A.A.S. Degree.*** (1.5+0)

ECE F299 Practicum for CDAs
1-3 Credits
A practical application of all previous CDA competency courses. The student will assume responsibility for children in an approved early childhood setting. (CDA curriculum.) ***Prerequisites: Placement in ENGL F111X or higher.*** (0+0)

ECE F301 Parents as Partners in Education
3 Credits Offered Spring Odd-numbered Years
Study of strategies that will assist those who work with children and/or families to facilitate supportive partnerships with parents. Includes partnerships, contemporary issues, school and home-based programs, rights and responsibilities, professional ethics, and parents with special or unique needs. ***Prerequisites: ECE F245 or permission of instructor.*** (1.5+3)

ECE F302 Building Home Program Relationships: Prenatal to 3 Years
3 Credits Offered As Demand Warrants
Focuses on professionalism, family support, ethics, cultural continuity, child development, attachment and curriculum of home-based programs. Addresses the broad continuum of services across multiple domains and how staff that work in these programs can meet the needs of children prenatal to 3 and their families in the home setting. ***Prerequisite: ENGL F111X. Recommended: ENGL F211X or F213X; ECE F342*** (3+0)

ECE F310 Constructivist Curriculum
3 Credits Offered Fall Even-numbered Years
A focus on the issues involved in developing constructive curriculum for young children. Includes a foundation in the aims and assumptions of constructivist teaching and key components of this type of curriculum. Emphasis is on best practices for constructivist classrooms. ***Prerequisites: ECE F245; junior standing. Recommended: ECE F130; ECE F210.*** (2.5+1)

ECE F320 Environment and Curriculum for Infants and Toddlers
3 Credits Offered As Demand Warrants
Roles and practices adults take for supporting learning and development in infants and toddlers aged birth - 3 years of age. Stresses the adoption of the child's individual abilities and interests while supporting their exploration, discovery, relationship building and problem solving through environment development. Prominence for family inclusion in curriculum development through reciprocal relationships. ***Prerequisites: ENGL F211X or ENGL F213X Recommended: ECE F104, or ECE 245, ECE F220, ECE F110*** (3+0)

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ECE F340 **Financial Management of Early Childhood Programs**
3 Credits Offered Fall Odd-numbered Years
The financial aspects of managing a day care center or preschool program. Includes budgeting, program resource management, marketing, purchasing, pay and compensation, and fee collection issues important to maintaining quality programs for young children. ***Prerequisites: ECE F245 or permission of instructor.*** (1+4)

ECE F341 **Personnel Management of Early Childhood Programs**
3 Credits Offered Spring Odd-numbered Years
Management of personnel of child care programs, including recruitment, hiring, in-service training, staff meetings and communication, supervision, evaluation, motivation, burnout prevention and termination of employees. Focus on maintaining quality programs for young children. ***Prerequisites: ECE F245 or permission of instructor.*** (1.5+3)

ECE F342 O **Family Relationships**
3 Credits Offered Fall
Examination of relationships in contemporary family life. Focus on the changing family, gender roles, living together, and relationships with children and grandchildren. Includes current family research and issues within and effect of public policy on families in our multicultural society. ***Prerequisites: COMM F131X or COMM F141X; upper-division standing; or permission of instructor.*** (3+0)

ECE F350 **Play: Foundation for Development** (s)
3 Credits Offered As Demand Warrants
Concepts, theories and empirical research on the role of the play in the total development of children. Utilizing three major ideas — the effective quality of play in early childhood development, as a means of self-expression, and as a channel of communication. Examines the effects culture, media and technology have on play. Includes roles of early care-giving staff, teachers, and parents in supporting appropriate play experiences. ***Prerequisites: ENGL F211X or F213X; ECE F107; ECE F245; or approved development class.*** (3+0)

ECE F360 **Assessment in Early Childhood**
3 Credits Offered Spring Even-numbered Years
Examination of policies and practices related to evaluation and assessment of young children's progress. Includes legal, ethical and professional responsibilities in assessment. Exploration of "what, when, why and how" to assess young children. Includes practice and analysis of various assessment styles and tools as well as how to use information gained through assessment. ***Prerequisites: ECE F130; ECE F230; ECE F240; ECE F245; junior standing. Recommended: ECE F210.*** (2.5+1)

ECE F405 **Seminar in Culture and Child Rearing Practices**
3 Credits Offered As Demand Warrants
Seminar course providing opportunity for students, cross regionally throughout Alaska and beyond, to engage in the comparative study of issues associated with culture and child rearing practices of families within Alaska and throughout the world. An emphasis will be placed on the role of caregiver working with children aged birth through three years of age. ***Prerequisite: ENGL F211X or ENGL F213X Recommended: ECE F104, or ECE/PSY/ED F245, ECE F130, ECE F342*** (3+0)

ECE F420 W **Developing Literacy in the Early Years**
3 Credits Offered Fall
Principles and practices in understanding and supporting young children's emerging literacy. Links the importance of oral language and early exploration with later reading and writing skills. Strategies for assisting emergent readers and writers are included, as well as how to use play and children's interests to assist in developing their literacy. ***Prerequisites: ECE F310; ECE F360; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; upper-division standing.*** (3+0)

ECE F421 **From Babbling to Talking to Early Literacy**
3 Credits Offered As Demand Warrants
This course provides the opportunity for exploration and understanding of infant-toddler beginning language and early literacy development as it reflects on research from multiple fields. Looks at the importance of oral language development and early explorations with literacy while considering principles and practices that provide support for families and culture. ***Prerequisite: ENGL F211X or ENGL F213X. Recommended: ECE F104 or ECE F245 or other early development course.*** (3+0)

ECE F430 **Fine Arts for the Early Years** (h)
3 Credits Offered Spring Odd-numbered Years
Focused on promoting the arts in children's lives. Explores the role of the teacher in helping children become aware of the beauty around them and to appreciate the variety and skill of many different kinds of art including: theatre, two- and three-dimensional art, crafts, vocal and instrumental music and dance. Strategies for assessing artistic development and working with families are incorporated. ***Prerequisites: ECE F310; completion of at least one humanities course; upper-division standing.*** (3+0)

ECE F440 **Exploring Math and Science**
3 Credits Offered Fall Odd-numbered Years
Focused on constructivist teaching of math and science. Explores the role of the teacher in helping children become theory builders in an environment designed to promote learning in math and science. Includes specific examples in chemistry, biology, ecology, numbers, patterns, geometry, measurement and data analysis. Emphasis is on teaching children an interactive, analytic and reflective process of inquiry. ***Prerequisites: ECE F310; ECE F360; upper-division standing. Recommended: Completion of at least one natural science course.*** (2.5+1)

ECE F442 **Family Resource Management**
3 Credits Offered Spring Even-numbered Years
Management of resources which help families meet and alter the increasing complexities of life. Involves purposeful actions that affect the use of time, money, energy, skills, talents and knowledge. Explores roles, goals and decision-making within our multicultural society throughout the life cycle. ***Prerequisites: ECE F245 or PSY F240; upper-division standing; or permission of instructor.*** (1.5+3)

ECE F445 W **Adolescence through the Lifespan**
3 Credits Offered Spring Odd-numbered Years
Study of the inter-relationships between early childhood and future development from adolescence through adulthood. Achievement in school, anorexia, chemical dependency and other health issues, family happiness, personal confidence and career success have all been linked to the early years. This course helps students understand these vital connections. ***Prerequisites: ECE F245; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; junior standing.*** (2.5+1)

ECE F470 **Advanced Practicum**
3 Credits Offered As Demand Warrants
Advanced practicum requiring 200 hours of work in an early childhood program or family support agency as a teacher, curriculum specialist, family advocate or in another related position. A capstone course available only to those who have completed the other required course work for the B.A. in Child Development and Family Studies degree and their designated specialty. ***Prerequisites: Senior standing; permission of instructor.*** (2.5+1)

ECONOMICS

Students enrolling in School of Management courses are expected to have completed the necessary prerequisites for each course.

A per semester student computing facility user fee will be assessed for student enrolling in one or more School or Management courses (AIS, ACCT, BA and ECON) except ECON F100X. This fee is in addition to any materials fees.

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ECON F100X **Political Economy** (s)
3 Credits
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. Also available via Independent Learning. ***Prerequisites: Placement in ENGL F111X or higher or permission of instructor.*** Cross-listed with PS F100X. (3+0)

ECON F111 **Economics of Rural Alaska**
3 Credits Offered As Demand Warrants
Basic economic concepts as they relate to issues and problems of contemporary regional development in rural Alaska. Socioeconomic consequences of the introduction of new technologies, modern economic intra-structures and corporate relationships to traditional, small scale communities. (3+0)

ECON F200 **Principles of Economics** (s)
4 Credits
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. Also available via Independent Learning. ***Prerequisites: MATH F107X or MATH F161X.*** (4+0+1)

ECON F201 **Principles of Economics I: Microeconomics** (s)
3 Credits
Price and market theory, income distribution, public policy, labor markets, market structure, and externalities. (3+0)

ECON F202 **Principles of Economics II: Macroeconomics** (s)
3 Credits
Analysis and theory of national income, money and banking, stabilization policy, and international trade and finance. (3+0)

ECON F227 **Intermediate Statistics for Economics and Business**
3 Credits
Extension of topics developed in STAT F200X. 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, nonparametric methods and decision theory. ***Prerequisites: AIS F101 or equivalent; STAT F200X; or permission of instructor.*** (3+0)

ECON F235 **Introduction to Natural Resource Economics** (s)
3 Credits Offered Fall
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. (3+0)

ECON F237 **The Alaskan Economy** (s)
3 Credits Offered Spring
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. (3+0)

ECON F321 **Intermediate Microeconomics** (s)
3 Credits
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 F200; MATH F262X or equivalent.*** (3+0)

ECON F322 **Managerial Economics**
3 Credits Offered Fall or Spring
Interpretation of economic data and applications of economic theory in business firms. Bridging the gap between theory and practice through empirical studies, cases and decision problems. Emphasis upon decision-making using analysis of research data. ***Prerequisites: ECON F200; MATH F262X or equivalent.*** (3+0)

ECON F324 **Intermediate Macroeconomics** (s)
3 Credits Offered Fall or Spring
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 F200.*** (3+0)

ECON F335 O **Intermediate Natural Resource Economics** (s)
3 Credits Offered Fall or Spring
Extension of concepts developed in ECON F235, using a higher level of economic analysis. Topics include welfare economics and economic efficiency concepts, benefit/cost analysis, resource allocation over time, resource taxation, common property problems, externalities, public goods, valuation of non-market resources, and land use planning issues. ***Prerequisites: COMM F131X or COMM F141X; ECON F200 or ECON F235; MATH F262X or equivalent.*** (3+0)

ECON F350 **Money and Banking** (s)
3 Credits Offered Fall or Spring
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. Also available via Independent Learning. ***Prerequisites: ECON F200.*** (3+0)

ECON F351 **Public Finance** (s)
3 Credits Offered Fall
Economic justifications for government; federal, state and local government, taxation, spending and debt; their effects on allocation, distribution, stabilization and growth. ***Prerequisites: ECON F201; ECON F202; MATH F262X or equivalent.*** (3+0)

ECON F420 W **Labor Markets and Public Policy** (s)
3 Credits Offered Spring Odd-numbered Years
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. ***Prerequisites: ECON F200; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** (3+0)

ECON F434 W **Environmental Economics**
3 Credits Offered Spring Odd-numbered Years
An extension of concepts introduced in ECON F235, using a higher level of economic analysis. An analysis of the economic forces involved in environmental degradation, preservation and regulation. Topics include pollution, biodiversity, wilderness and climatic change. ***Prerequisites: ECON F200 or ECON F235; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; MATH F262X or equivalent.*** (3+0)

ECON F439 W **Energy Economics** (s)
3 Credits Offered Fall Odd-numbered Years
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. ***Prerequisites: ECON F200 or ECON F235; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** Stacked with ECON F639. (3+0)

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ECON F451 W **Public Expenditure Analysis**
3 Credits Offered Spring Odd-numbered Years
Purposes and economic effects of governmental expenditures, budgeting techniques, and their effects on resource allocation. ***Prerequisites: ECON F200; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; MATH F262X or equivalent.*** (3+0)

ECON F463 W **International Economics** (s)
3 Credits Offered Fall or Spring
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 and economic development through international trade. ***Prerequisites: ECON F200; ENGL F111X; ENGL F211X or F213X or permission of instructor; MATH F262X or equivalent.*** (3+0)

ECON F601 **Microeconomic Theory I**
3 Credits Offered Fall
Analysis of consumer and producer theory, price determination and welfare economics. ***Prerequisites: ECON F321 or equivalent; MATH F200X or equivalent; graduate standing; or permission of instructor.*** (3+0)

ECON F602 **Economic Modeling**
3 Credits Offered Fall
A hands on approach to applied microeconomics and resource modeling. Students extend their training in economic theory and econometrics to model real life problems in the areas of renewable and exhaustible resources, nonmarket valuation and environmental economics. Special emphasis will be given to the use of econometric analyses. ***Prerequisites: ECON F601; ECON F626 or equivalent; graduate standing; or permission of instructor.*** (3+0)

ECON F603 **Macroeconomic Theory I**
3 Credits Offered Spring
Analysis of the underlying causes of unemployment, economic instability, inflation and economic growth. ***Prerequisites: ECON F321 or equivalent; ECON F324 or equivalent; MATH F200X or equivalent; graduate standing; or permission of instructor.*** (3+0)

ECON F613 **Resilience Internship**
2 Credits Offered Fall
Students of the Resilience and Adaptation Program participate in internships to broaden their interdisciplinary training, develop new research tools and build expertise outside their home disciplines. Internships are eight to ten weeks of full time commitment and take place during the student's first summer in the program. In the autumn students meet to discuss their internship experiences and make public presentations. ***Prerequisites: ANTH/BIOL/ECON/NRM F667; ANTH/BIOL/ECON/NRM F668; or permission of instructor.*** Cross-listed with ANTH F617; BIOL F613; NRM F613. (2+0)

ECON F616 **Economics Background for Resilience and Adaptation**
1 Credit Offered Fall
Provides the economics background that is necessary for understanding the role of economics in complex systems involving interactions among biological, economic, and social processes. Designed for incoming students of the Resilience and Adaptation Program (RAP), who have not received training in ecology. Graded Pass/Fail. ***Prerequisites: Graduate student enrollment or permission of instructor.*** (1+0)

ECON F621 **Fundamentals of Economics**
3 Credits Offered Spring
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: Graduate standing or permission of MBA Director.*** (3+0)

ECON F623 **Mathematical Economics**
3 Credits Offered Fall
Mathematical techniques including matrix algebra, differential and integral calculus. Particular attention is given to static and comparative statics analysis and dynamic models. ***Prerequisites: MATH F200X or equivalent; graduate standing; or permission of instructor.*** (3+0)

ECON F626 **Econometrics**
3 Credits Offered Spring
Introduction to econometric theory. Single equation and multiple equation system estimation, including inference and hypothesis testing and results of assumption violation. ***Prerequisites: ECON F227 or equivalent; MATH F200X or equivalent; STAT F401; graduate standing; or permission of instructor.*** (3+0)

ECON F627 **Advanced Econometrics**
3 Credits Offered Fall
Advanced Econometrics is the second graduate econometrics course in the Ph.D. in Resource Economic program. This course builds upon the theoretical and empirical tools developed in ECON F626. Large sample theory and the Maximum Likelihood estimation theory are covered. Limited dependent variable models widely used in applied microeconometric modeling are developed and extended. Univariate and multivariate time series modeling and forecasting is developed. ***Prerequisites: ECON F626 or equivalent; graduate standing; or permission of instructor.*** (3+0)

ECON F628 **Analytical Methods for Economics and Business**
3 Credits Offered Spring
Covers the important analytical management tools and techniques and their application to business problems. In particular, we will cover both mathematical and statistical techniques that have direct applications in a variety of management situations. This course will serve as a foundation course for the MBA program. ***Prerequisites: Graduate standing or permission of M.B.A. Director.*** (3+0)

ECON F635 **Renewable Resource Economics**
3 Credits Offered Fall
The theory, methods of analysis and current literature of natural resource economics and policy for fisheries, forests and wildlife. Topics include externalities, property rights, public goods, benefit-cost analysis, amenity values and other non-market resource services, and environmental policy. ***Prerequisites: ECON F321; ECON F335 or equivalent; MATH F200X or equivalent; graduate standing; or permission of instructor.*** (3+0)

ECON F636 **Non-Renewable Resource Economics**
3 Credits Offered Spring
Exploration of issues relating to the mineral and energy markets. The analysis of energy and mineral use over time, capital investment problems and world market dynamics are explored. Topics include futures markets, present value, energy value and entropy. ***Prerequisites: ECON F321; ECON F335 or equivalent; MATH F200X or equivalent; graduate standing; or permission of instructor.*** (3+0)

ECON F637 **Evolution of Conservation Concepts and Policy**
3 Credits Offered Spring
Resource policy issues development and implementation including forestry, mining, fisheries, oil, wildlife and other topics as demand warrants. Focus on policy issues involved in management of Alaska's resources. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with NRM F637. (3+0)

ECON F639 **Energy Economics**
3 Credits Offered Fall Odd-numbered Years
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. ***Prerequisites: ECON F200 or ECON F235; graduate standing; or permission of instructor.*** Stacked with ECON F439. (3+0)

ECON F647 **Global to Local Sustainability**
3 Credits Offered Fall
Explores the basic principles that govern resilience and change of ecological and social systems. Principles are applied across a range of scales from local communities to the globe. Working within and across each of these scales,

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students address the processes that influence ecological, cultural and economic sustainability, with an emphasis on northern examples. ***Prerequisites: Graduate standing in a natural science, social science, humanities or interdisciplinary program at UAF; permission of instructor.*** Cross-listed with ANTH F647; BIOL F647; NRM F647. (3+0)

ECON F649 **Integrated Assessment and Adaptive Management**
3 Credits Offered Spring
Interdisciplinary exploration of theoretical and practical considerations of integrated assessment and adaptive management. Students survey concepts important in understanding societal and professional-level decision-making. Students work as individuals and as a team to undertake case studies with relevance to integrated assessment and adaptive management. Collectively, the class builds a portfolio of cases and conducts an integrated assessment. Note: In case of enrollment limit, priority will be given to graduate students in the Resilience and Adaptation Program in order for them to be able to meet their core requirement. ***Prerequisites: Graduate student standing in a natural science, social science, humanities or interdisciplinary program at UAF or another university, or permission of instructor. The course is designed to fit into the sequence of the Resilience and Adaptation program's core courses. It is open to other graduate students interested in and prepared to conduct interdisciplinary studies relating to sustainability. Recommended: ANTH/BIOL/ECON/NRM F647; ANTH/BIOL/ECON/NRM F648 and ANTH/BIOL/ECON/NRM F667 previously or concurrently.*** Cross-listed with ANTH F649; BIOL F649; NRM F649. (3+0)

ECON F667 **Resilience Seminar I**
1 Credit Offered Fall
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research that are relevant to sustainability. A considerable portion of the seminar is student-directed, with students assuming leadership in planning seminar activities with the instructor. Graded Pass/Fail. ***Prerequisites: Enrollment in Resilience and Adaptation graduate program or have permission of instructor. Recommended: ANTH/BIOL/ECON/NRM F647 taken concurrently.*** Cross-listed with ANTH F667; BIOL F667; NRM F667. (2+0)

ECON F668 **Resilience Seminar II**
1 Credit Offered Spring
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research that are relevant to sustainability. The seminar provides support to each student planning his/her summer internship and preparing and presenting a thesis research prospectus. Graded Pass/Fail. ***Prerequisites: ANTH/BIOL/ECON/NRM F647; ANTH/BIOL/ECON/NRM F667; or permission of instructor.*** Cross-listed with ANTH F668; BIOL F668; NRM F668. (2+0)

ECON F670 **Seminar in Research Methodology**
1 Credit Offered Spring
Philosophy of research and importance of the scientific method to solution of research problems. Graded Pass/Fail. ***Prerequisites: Graduate standing.*** (1+0)

EDUCATION

ED F100 **Language, Education, Linguistics** (h)
3 Credits Offered Spring
Introduction to the field of linguistics as it pertains to the field of education. Includes discussions of language structure, acquisition and bilingualism, and variation and public policy. The course does not satisfy requirements for the B.A. in Linguistics. Cross-listed with LING F100. (3+0)

ED F102 **Orientation to Alaska Native Education**
2 Credits
A seminar in issues related to Alaska Native and rural education. Through weekly meetings held both on campus and in Fairbanks schools, students examine and discuss issues with Alaska Native educators on topics related specifically to rural and urban Alaska Native education. Issues include: Native ways of knowing, local control, curriculum development for small/multi-graded/rural schools, cultural differences in teaching and learning, and bilingual programs. Graded Pass/Fail. ***Prerequisites: Permission of instructor.*** Cross-listed with ANS F102. (2+0)

ED F110 **Becoming a Teacher in the 21st Century**
1 Credit
Series of seminars focusing on current national educational policies and practices. Includes exploration of teaching as a profession. Presented in the Alaska context, seminars include opportunity for interaction with Alaska teachers, student teachers and interns. Graded Pass/Fail. (1+0)

ED F201 **Introduction to Education**
3 Credits
Introduction to the profession of education and specifically, the field of teaching. Review of social, political, cultural and historical factors that influence education and schools at the national and Alaska state level. Field experience required. ***Prerequisites: ED F110; ENGL F111X; sophomore standing; or permission of instructor.*** (3+0)

ED F204 **Literature for Children**
3 Credits
Examination of effective uses of literature to promote learning. Critical analysis of authors, illustrators and content of children's literature representative of multiple genres and diverse peoples and perspectives — including Alaska literature. Review of criteria for book selection and application of review process to books selected by students based on professional recommendations and reviews. Field experience required. ***Prerequisites: ED F201.*** (3+0)

ED F237A **Technology Tools for Teachers: Graphical Organizers**
0.5 Credit Offered Fall, Spring, As Demand Warrants
Designed to equip pre-service teachers with the necessary technology skills to be successful in their pre-service programs. Successful challenge or completion of all modules is a prerequisite for ED F329. May be repeated once for credit. Each module will require approximately 6 hours of direct instruction and 4-8 hours of lab work. It is divided into 4 separate modules. This module covers creating outlines and diagrams, concept maps, exporting to other applications (requires Inspiration). Graded Pass/Fail. (0.5+2)

ED F237B **Technology Tools for Teachers: Publishing**
0.5 Credit Offered Fall, Spring, As Demand Warrants
Designed to equip pre-service teachers with the necessary technology skills to be successful in their pre-service programs. Successful challenge or completion of all modules is a prerequisite for ED F329. May be repeated once for credit. Each module will require approximately six hours of direct instruction and four to eight hours of lab work. It is divided into four separate modules. This module covers publishing: word processing, graphics and page layout. Graded Pass/Fail. (0.5+2)

ED F237C **Technology Tools for Teachers: Presentations**
0.5 Credit Offered Fall, Spring, As Demand Warrants
Designed to equip pre-service teachers with the necessary technology skills to be successful in their pre-service programs. Successful challenge or completion of all modules is a prerequisite for ED F329. May be repeated once for credit. Each module will require approximately six hours direct instruction and four to eight hours of lab work. It is divided into four separate modules. This module covers presentation/graphical organizers: PowerPoint and Inspiration. Graded Pass/Fail. (0.5+2)

ED F237D **Technology Tools for Teachers: Spreadsheets/ Databases**
0.5 Credit Offered Fall, Spring, As Demand Warrants
Designed to equip pre-service teachers with the necessary technology skills to be successful in their pre-service programs. Successful challenge or completion of all modules is a prerequisite for ED F329. May be repeated once for credit. Each module will require approximately six hours of direct instruction and

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four to eight hours of lab work. It is divided into four separate modules. This module covers spreadsheets/databases: databases (Appleworks, Access) and spreadsheets (Excel). Graded Pass/Fail. (0.5+2)

ED F245 Child Development
3 Credits
A study of the physical, cultural, emotional, cognitive and social aspects of a child's development from prenatal period through early adolescence. Focus on developmental theories including Erickson, Gardner, Gilligan, Kagen, Sternberg, Vygotsky and other contemporary theories of child and adolescent development. ***Prerequisites: PSY F101 or permission of instructor.*** Cross-listed with PSY F245. (3+0)

ED F303 W,O Language Acquisition
3 Credits Offered as Demand Warrants
Theories of the acquisition and development of first and second languages, including consideration of biological and sociocultural factors. Survey of traditional and contemporary theories, and implications for pedagogy and public policy. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor. Recommended: LING F101.*** Cross-listed with LING F303. (3+0)

ED F309 Elementary School Music Methods
3 Credits Offered Fall Even-numbered Years
Principles, procedures and materials for teaching music to children at the elementary level. Cross-listed with MUED F309. (3+0)

ED F329 Teaching with Technology
3 Credits
Participants will examine multiple strategies for the effective use of computers and related technologies in the classroom. Emphasis will be on the use of mainstream cross-platform productivity applications to develop understanding of the schemes for using databases, spreadsheets, page layouts, digital video, presentations and graphical organizers in transformed instructional settings. Students must have access to Word, PowerPoint, Excel, and Inspiration. ***Prerequisites: ED F237 or passing the equivalent competency test, or permission of instructor; laptop computer required.*** (3+0)

ED F330 Assessment of Learning
3 Credits
Review and examination of the range of traditional and alternative assessment and evaluation approaches used in educational contexts. Focus is on developing assessment practices and policies that are appropriate for the diverse student population in Alaska's rural and urban schools. Field experience required. ***Prerequisites: ED F201; a mathematics baccalaureate core course; or permission of instructor.*** (3+0)

ED F344 W Foundations of Literacy Development
3 Credits
Language, reading, and writing development examined in children of varying ages and within a range of social and cultural contexts, with emphasis on a developmental approach to literacy development in school and home settings. Introduction to best practices in research-based methods for teaching and learning of reading and writing. Field experience required. ***Prerequisites: ED F201; ED F204; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; upper-division standing; laptop computer required.*** (3+0)

ED F345 Sociology of Education (s)
3 Credits Offered Fall Odd-numbered Years
Theoretical perspectives on various dimensions of the relationship between education and society, including the institutional context for schooling, the impact of schooling on social stratification and social organization within the school and classroom. Special attention is given to issues of equity and contemporary education reform efforts. ***Prerequisites: SOC F100X or permission of instructor.*** Cross-listed with SOC F345. (3+0)

ED F350 Communication in Cross-Cultural Classrooms
3 Credits
Interdisciplinary examination of communication and language in cross-cultural educational contexts, including language, literacy and interethnic communication related to classrooms in Alaska. ***Prerequisites: ED F201.*** (3+0)

ED F370 Issues in Alaska Bilingual and Multicultural Education
1 Credit Offered As Demand Warrants
Current issues related to Alaska bilingual and multicultural education. Students must attend all three days of the annual Alaska Bilingual/Multicultural Education and Equity Conference and write a paper reflecting on how they will use information gained from the conference in their own multicultural education context. Course may be repeated for credit since the content of the conference changes each year. Graded Pass/Fail. ***Prerequisites: Prior course work at the lower-division level.*** Cross-listed with ANS F370. (1+0)

ED F380 Cultural Influences in Education
3 Credits Offered As Demand Warrants
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. ***Prerequisites: Junior standing.*** (3+0)

ED F385 International Perspectives on Education
3 Credits Offered As Demand Warrants
A comparative analysis of the influences of changing political, social and economic conditions and relationships with other countries in the world on U.S. and Alaska education policies. Examination of school systems in several industrialized and developing countries with focus on understanding Alaska's educational system within the context of this wider global community. ***Prerequisites: Junior standing.*** (3+0)

ED F411 Reading, Writing, Language Arts: Methods and Curriculum Development
3 Credits Offered Fall
Study and application in the classroom of best practices from research-based strategies for the teaching and learning of reading, writing and language arts concepts. Includes content and methods for students in elementary classrooms with diverse populations. Requires development and classroom implementation of integrated reading and writing unit. Concurrent internship required. ***Prerequisites: Admission to Internship Year.*** (3+0)

ED F412 W Integrated Social Studies and Language Arts: Methods and Curriculum Development
3 Credits Offered Fall
Study and application in the classroom of best practices from research-based strategies for the teaching and learning of social studies concepts, content, and methods integrated with language arts for students in elementary classrooms with diverse populations. Requires development and classroom implementation of integrated social studies and language arts unit. Concurrent internship required. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; admission to Internship Year.*** (3+0)

ED F414 Art, Music and Drama in Elementary Classrooms
2 Credits Offered Spring
Exploration and application, in the classroom, of theory, practice, methods and materials used in teaching in and through visual art, music and drama. Concurrent internship required. ***Prerequisites: Admission to the Internship Year.*** (1+2)

ED F417 Physical and Health Education for Elementary Teachers
2 Credits
Introduction and application of the relationship between physical fitness and good health in a school setting. Includes introducing students to fundamental

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movement activities and games. Includes incorporating health curriculum and first aid procedures into practices and policies, and issues specific to the Alaska context. Concurrent internship required. ***Prerequisites: Admission to the Internship Year.*** (1+2)

ED F420 **Alaska Native Education** (s)
3 Credits Offered Fall
School systems historically serving Native people, current efforts toward local control, and the cross-cultural nature of this education. Field experience required. ***Prerequisites: ANTH F242 or permission of instructor.*** Cross-listed with ANS F420. Stacked with ED F606. (3+0)

ED F440 **Gender and Education** (s)
3 Credits Offered Spring Even-numbered Years
Educational practices and processes and their relation to the changing situation of women in society. Examination of schools as sites of pervasive gender socialization and discrimination as well as offering new possibilities for liberation. Topics include social construction of gender, patterns of access and achievements, gender as an organizing principle in schools and classrooms, and feminist agendas and strategies for change. ***Prerequisites: Junior standing or permission of instructor.*** Cross-listed with WGS F440. Stacked with ED F640. (3+0)

ED F449 **Elementary Art Methods**
3 Credits Offered Spring
Methodologies of instruction and assessment in art education at the elementary level. Focus is on the knowledge and tools necessary to become excellent elementary art educators. Students will be expected to construct lessons reflecting theory and practice that are developmentally appropriate for elementary level students of all ages. Particular attention will be given to using and understanding the National Standards for Art Education, Alaska Content/ Performance Standards, and key curriculum documents in an elementary context. ***Prerequisites: Admission to K-12 Art post-baccalaureate licensure program or to M.Ed. in Curriculum and Instruction option for post-baccalaureate students.*** Stacked with ED F649. (3+0)

ED F450 **Education and Cultural Transmission**
3 Credits Offered As Demand Warrants
Education as a process for transmitting culture with examination of issues related to cultural transmission in a multicultural environment. Emphasis on dynamics of cultural change. ***Prerequisites: Junior standing.*** (3+0)

ED F451 **Practicum in Education**
1-9 Credits
Practical application of general ideas and techniques addressed in methods courses in which the student is currently enrolled or previously completed. ***Prerequisites: Permission of Office of Practical Experiences.*** (0+0)

ED F452 O **Elementary Internship**
3-15 Credits
Supervised teaching in elementary schools approved by the School of Education. Students should expect to be involved in the school setting for some or all of the school day (depending on number of credits taken) for the entire university semester. The School of Education may limit enrollment, determine assignments and cancel the registration of students doing unsatisfactory work. Graded Pass/Fail. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; successful completion of methods practicum and methods course work with a C or better. Post-baccalaureate students must be admitted to the Art K-12 licensure program. Passing Praxis I scores.*** Cross-listed with ART F458. (1+0+42)

ED F453 O **Secondary Internship**
3-15 Credits
Supervised teaching in secondary schools approved by the School of Education. Students should expect to be involved in the school setting for some or all of the school day (depending on number of credits taken) for the entire university semester. The School of Education may limit enrollment, determine assignments and cancel the registration of students doing unsatisfactory work. Graded Pass/Fail. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; and successful completion of methods practicum and methods course work with a C or better. Post-baccalaureate students must be admitted to K-12 Art licensure program. Passing Praxis I scores.*** Cross-listed with ART F459. (1+0+42)

ED F454 O **Student Teaching K-12**
15 Credits
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 enrollment, determine assignments and cancel the registration of students doing unsatisfactory work. Graded Pass/Fail. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X, successful completion of methods practicum and methods course work with a C or better. Passing Praxis scores. For Bachelor of Music students, see B.M. degree requirements.*** (1+0+42)

ED F456 **Orientation to Teaching in Rural Alaska**
3 Credits Offered Summer, As Demand Warrants
Needs of rural schools, their environments and the recipients of school services with special attention given to cross-cultural educational issues. ***Prerequisites: Permission of instructor.*** (2+3)

ED F461 **Native Ways of Knowing** (h)
3 Credits Offered Spring
Focus on how culture and worldview shape who we are and influence the way we come to know the world around us. Emphasis on Alaska Native knowledge systems and ways of knowing. ***Prerequisites: Junior standing.*** Cross-listed with ANS F461. (3+0)

ED F462 **Alaskan Environmental Education**
3 Credits Offered As Demand Warrants
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. ***Prerequisites: Junior standing.*** Cross-listed with NRM F462. (3+0)

ED F465 **Working with FAS/FAE Children**
3 Credits Offered Fall
For families of children with FAS/FAE and professionals — teachers, social workers and health workers who deal with these children. Guest speakers, interviews and reading materials. Project is the development of activities to use with these children with FAS/FAE. Access to work in a school setting required. (Not available on Fairbanks campus.) (2+4)

ED F466 **Internship and Collaborative Student Teaching**
3 Credits Offered Fall
Supervised internship for students in the first half of a year-long professional internship in elementary teacher education. Includes immersion in planning and teaching. Course work is integrated into the internship experience. Interns are assessed in relationship to UAF/Alaska state and national standards. Graded Pass/Fail. Special fees apply. ***Prerequisites: Admission to Internship Year.*** (1+0+25)

ED F467 **Synthesizing the Standards I**
1 Credit Offered Fall
For student interns participating in the first half of the professional internship year. Interns use the UAF/Alaska Teacher Standards as the basis for examining field- and course-based experiences and activities during the internship year. Includes collection and analysis of selected artifacts to document and provide evidence of professional development and achievement relative to educational standards. Interns present portfolio for midyear assessment. Concurrent internship required. ***Prerequisites: Admission to Internship Year.*** (1+0)

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ED F468 O **Internship and Student Teaching**
6 Credits Offered Spring
For student interns participating in the second half of the year-long professional elementary teacher education internship. Interns must spend at least four days per week in the classroom, one month full-time in the classroom including at least three weeks of full responsibility for the classroom. Builds on ED F466 requirements with continued assessment based on UAF/ Alaska State and National Standards. Graded Pass/Fail. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; admission to the Internship Year.*** (1+0+40)

ED F469 **Synthesizing the Standards II**
2 Credits Offered Spring
For student interns participating in the second half of the professional internship year. Interns use the UAF/Alaska Teacher Standards as a basis for examining field- and course-based experiences and activities during the internship year. Includes collection and analysis of selected artifacts to document and provide evidence of professional development and achievement relative to educational standards. Interns formally present completed portfolios for reviews and evaluations. Concurrent internship required. ***Prerequisites: Admission to the Internship Year.*** (2+0)

ED F478 **Math Methods and Curriculum Development**
2 Credits Offered Fall
Study and application in the classroom of best practices from research-based strategies for the teaching and learning of mathematical concepts, content and methods for students in elementary classrooms with diverse populations. Requires development and classroom implementation of mathematics unit. Concurrent internship required. ***Prerequisites: Admission to Internship Year.*** Stacked with ED F678. (2+0)

ED F479 **Science Methods and Curriculum Development**
2 Credits Offered Spring
Study and application in the classroom of the best practices from research-based strategies for the teaching and learning of science concepts, content and methods for students in elementary classrooms with diverse populations. Requires development and classroom implementation of science unit. Classroom internship required. ***Prerequisites: Admission to internship year; concurrent enrollment in other internship year courses; Alaska passing scores for three Praxis I exams.*** Stacked with ED F688. (2+0)

ED F486 O/2 **Media Literacy** (h)
3 Credits
Promotes critical thinking skills that empower people to make independent judgments and informed decisions in response to information conveyed through the channels of mass communications. Emphasis on developing students and others into critical viewers, listeners and readers of media. Also available via Independent Learning. ***Prerequisites: COMM F131X or COMM F141X; junior standing; laptop computer.*** (3+0)

ED F601 **Introduction to Applied Social Science Research**
3 Credits
Review of the most common educational research paradigms, data gathering techniques and analytical tools used in the study of human behavior and educational institutions. Attention will be given to collaborative research models, with a focus on the translation of research results into practical application. (3+0)

ED F603 **Field Study Research Methods**
3 Credits
Focus on techniques for conducting both quantitative and qualitative field research. Particular emphasis on considerations for conducting field research in cross-cultural settings. ***Prerequisites: ED F601.*** Cross-listed with CCS F603. (3+0)

ED F604 **Documenting Indigenous Knowledge**
3 Credits Offered Fall
A thorough grounding in research methodologies and issues associated with documenting and conveying the depth and breadth of indigenous knowledge systems and their epistemological structures. Includes a survey of oral and literate data-gathering techniques, a review of various modes of analysis and presentation, and a practical experience in a real-life setting. ***Prerequisites: Graduate standing or approval of the instructor.*** Cross-listed with: CCS F604. (3+0)

ED F606 **Alaska Native Education**
3 Credits Offered Fall
School systems historically serving Native people, current efforts toward local control and the cross-cultural nature of this education. Field experience required. ***Prerequisite: ANTH F242; or permission of instructor.*** Stacked with ANS F420; ED F420. (3+0)

ED F608 **Indigenous Knowledge Systems**
3 Credits Offered Fall
A comparative survey and analysis of the epistemological properties, world views and modes of transmission associated with various indigenous knowledge systems. Emphasis on knowledge systems practiced in Alaska. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with CCS F608; RD F608; ANL F608. (3+0)

ED F610 **Education and Cultural Processes**
3 Credits Offered As Demand Warrants
Advanced study of the function of education as a cultural process and its relation to other aspects of a cultural system. Students will be required to prepare a study in which they examine some aspect of education in a particular cultural context. Also available via Independent Learning. Cross-listed with CCS F610. (3+0)

ED F611 **Culture, Cognition and Knowledge Acquisition**
3 Credits Offered Fall
An examination of the relationship between learning, thinking and perception in multicultural contexts. Particular emphasis will be on the implications of these relationships for schooling. Content will focus on cultural influences on perception, conceptual processes, learning, memory and problem solving. Content will also reflect concern for practical teaching problems. ***Recommended: ED F610.*** Cross-listed with CCS F611. (3+0)

ED F612 **Foundations of Education**
3 Credits Offered Fall
Introduces a range of philosophical thought with emphasis on schooling in the cross-cultural context and on issues of social justice and quality in education. Students will explore the interplay between cultural processes and various philosophical positions adopted by educators in the design and practice of pedagogy, learn the history of public school education in the U.S. and Alaska and analyze the policies affecting public school education today. (3+0)

ED F613 **Alaska Standards for Culturally Responsive Schools**
3 Credits Offered As Demand Warrants
Guidelines, rationale and resources for adapting educational policies, programs and practices to better address the cultural well-being of the students and communities they serve. Content will be grounded in the Alaska Standards for Culturally Responsive Schools, including standards for students, teachers, curriculum, schools and communities. Cross-listed with CCS F613. (3+0)

ED F616 **Education and Socioeconomic Change**
3 Credits Offered As Demand Warrants
An examination of social change processes, particularly in relation to the deliberate development of new institutions and resulting forms of new consciousness. Emphasis is placed on the role of education and schooling in this development dynamic. Also available via Independent Learning. Cross-listed with: CCS F616 (3+0)

ED F618 **Higher Education: Basic Understanding**
3 Credits Offered As Demand Warrants
Historical and philosophical foundations of higher education, both in America and abroad. Examination of curriculum development, instruction, administration and inter-institutional cooperation, with emphasis on trends and innovations in higher education. (3+0)

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ED F620 Language, Literacy and Learning
3 Credits Offered Fall
The relationships among language, culture and thinking as issues of literacy and learning. Specific areas of emphasis include linguistic relativity, discourse, role of context in communications, variant language learning strategies and styles, speech community, open and closed linguistic systems, cognitive styles, and literacy as a cultural and cognitive phenomenon. (3+0)

ED F621 Cultural Aspects of Language Acquisition
3 Credits
An expanded view of the ways in which individuals become socialized into particular patterns of first and second language and literacy. The ongoing acquisition of both oral and written language(s) from early childhood through adult life. Topics will include: the cultural dimensions of language development; the relationship between communication and culture; bilingualism; and the role of language in the transmission of sociocultural knowledge. Cross-listed with LING F621. (3+0)

ED F624 Foundations of Education in Alaska: From Segregation to Standards
3 Credits Offered Summer, As Demand Warrants
Review of major Alaska educational reform efforts as a means of understanding historical and current state, national and international policies and practices related to development of curriculum, pedagogy and assessment that respond to the needs and interests of culturally and linguistically diverse populations. Examination of Alaska Quality Schools Initiative reform effort with focus on use of Alaska Standards for Culturally Responsive Schools. ***Prerequisites: Admission to Internship Year or permission of instructor; a laptop computer.*** (3+0)

ED F625 Exceptional Learners and Child Development: Individual and Cultural Characteristics
3 Credits Offered Summer, As Demand Warrants
Foundation for understanding, identifying and teaching to developmental abilities of children and early adolescents. Human development examined in context of cognition, personality, social behavior, language and physical development with focus on understanding and using cross-cultural influences specific to Alaska. Emphasis on development of children with exceptional abilities. Design, develop and modify curriculum and instruction to developmentally and culturally appropriate approaches. Theory is applied to practice in practicum. ***Prerequisites: Admission to Internship Year or permission of instructor.*** (3+0)

ED F626 Teaching Reading, Writing and Language Arts
3 Credits Offered Summer, As Demand Warrants
Examination of the nature and process of reading and writing for elementary students and focus on process of developing a language arts program. Includes acquisition and role of language in this process. Examination and evaluation of materials and methods of teaching language arts, including those used in some Alaska districts. Examination and evaluation of children's literature. Practicum with application of language arts concepts. ***Prerequisites: Admission to Internship Year or permission of instructor.*** (3+0)

ED F630 Curriculum Development
3 Credits Offered Fall
Basic definition of curriculum. Includes the present need for curriculum improvement, criteria for selection of broad goals, types of curriculum frameworks and consideration of the organization of specific learning experiences as part of the curriculum structure. (3+0)

ED F631 Culture, Community and the Curriculum
3 Credits Offered Fall
Salient issues involved with the development of effective programs of instruction in small schools, including foundational design, conceptual models, organizational strategies, technical skills, current issues and trends, and their implications and application to the environment of rural Alaska. Also available via Independent Learning. Cross-listed with: CCS F631 (3+0)

ED F635 Strategies for Cooperating/Mentor Teachers
3 Credits Offered As Demand Warrants
Study of effective teaching using alternative strategies appropriate to differing goals. Consideration will also be given to teaming with and/or supervising interns as a technique for improving instruction. Course may be repeated for credit as readings and topics change. ***Prerequisites: Licensed teacher employed in a school district.*** (3+0)

ED F636 Improvement of Elementary Teaching
3 Credits Offered As Demand Warrants
Emphasis on improvement of elementary teaching through professional development in which mentor teachers read, reflect and collaborate with one another and with university faculty to develop new approaches for their own professional development as well as developing and refining strategies that contribute to the preparation of student interns who can successfully demonstrate competence in the Alaska Teacher Standards and the Alaska Standards for Culturally Responsive Schools. Course may be repeated for credit as readings and topics change. (3+0)

ED F640 Gender and Education
3 Credits Offered Spring Even-numbered Years
Educational practices and processes and their relation to the changing situation of women in society. Schools will be examined as sites of pervasive gender socialization and discrimination as well as offering new possibilities for liberation. Topics include the social construction of gender, patterns of access and achievement, gender as an organizing principle in schools and classrooms, and feminist agendas and strategies for change. Stacked with ED F440; WGS F440. (3+0)

ED F642 Portfolio Preparation: Integrating Theory and Practice
3 Credits Offered Spring
Continued systematic collection of selected work, and final preparation and presentation of required portfolios that document and provide evidence of professional development and achievement as beginning teachers relative to Alaska Teacher Standards and Alaska Student Content Standards, integrated with the Alaska Standards for Culturally Responsive Schools. Processes and products involved in portfolio preparation serve as basis for goal setting and assessment by interns, peers, mentors and university faculty. Portfolios must provide tangible evidence of the range of knowledge, dispositions and skills that the intern possesses. Technology focus: utilization of technology to prepare portfolios. Addresses Alaska Teacher Standards. ***Prerequisites: Admission to the post-baccalaureate elementary or secondary licensure program or permission of instructor.*** (2+0+3)

ED F643 Classroom Research
3 Credits Offered As Demand Warrants
Emphasis on providing teachers with classroom research skill and techniques for improving instruction. Includes basic educational research concepts, methods and application, and their impact on policy and practice. (1+6)

ED F645 Small Schools Institute
3 Credits Offered As Demand Warrants
A forum for experienced elementary and secondary rural school teachers. Discussions and seminars held with university and guest faculty, whose fields of expertise have direct applicability to small school concerns, will provide an environment for participants to share and refine different interethnic communication styles, culturally congruent teaching methodologies and curricula, and contextual understandings of the Native pupil's world. ***Prerequisites: Recent rural Alaskan small schools teaching experience.*** (2+3)

ED F649 Elementary Art Methods
3 Credits Offered Spring
Methodologies of instruction and assessment in art education at the elementary level. Focus is on the knowledge and tools necessary to become excellent elementary art educators. Students will be expected to construct lessons reflecting theory and practice that are developmentally appropriate for elementary level students of all ages. Particular attention will be given to using and

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understanding the National Standards for Art Education, Alaska Content/ Performance Standards and key curriculum documents in an elementary context. ***Prerequisites: Admission to K-12 Art post-baccalaureate licensure program or M.Ed. in Curriculum and Instruction option for post-baccalaureate students.*** Stacked with ED F449. (3+0)

ED F659 **Multimedia Tools for Teachers**
3 Credits Offered Spring
Emerging technologies and software applications in education. The use of multimedia in designing teaching/learning experiences will be emphasized. Students will develop a multimedia classroom presentation and will demonstrate knowledge of Internet resources. (1+6)

ED F660 **Educational Administration in Cultural Perspective**
3 Credits Offered As Demand Warrants
Issues related to the social organization and socio-political context of schools, administrative and institutional change processes and the changing role of administrators in education, using a cross-cultural framework for analysis. Also available via Independent Learning. (3+0)

ED F669 **Reading, Language and Culture**
3 Credits Offered Fall, As Demand Warrants
Introduction to the foundations of psycholinguistic and sociolinguistic theories as they relate to oral and written language acquisition and development. Focus on issues of language and literacy education practices in the Alaska context. Topics include bi-lingual and bi-literacy education, school and community languages and literacies, and culturally responsive pedagogy. Emphasis on teachers/students developing the skills and dispositions to become researchers of culture, language and literacy in their communities. (3+0)

ED F670 **Developing Reading: ECE-12**
3 Credits Offered Fall
Literacy from early childhood through grade 12. Emphasis on developmental aspects of literacy, underlying social and cognitive processes, and the pedagogical implications for teachers. Additional emphasis on the current roles of reading/literacy coaches. (3+0)

ED F671 **Reading and Cognition**
3 Credits Offered Spring
Theory and process of reading cognition, particularly the relationship between reading and thinking. Exploration of issues related to the meaning of text and the development of comprehension. Review of literature concerning research and theory about reading processes. Additional preparation for the role of the reading/literacy coach in schools, districts and communities. (3+0)

ED F672 **Literature and Reading: Supporting Readers at All Levels**
3 Credits Offered Summer
Read, analyze and design ways to use literature to support readers at all levels. Includes critical and personal response to literature, knowledge of a wide range of appropriate reading material; Includes interdisciplinary study using children's literature in varied genres. Classroom, family and community applications are emphasized. (3+0)

ED F673 **Reading and Literacy in the Content Area**
3 Credits Offered Fall
Development of knowledge of reading strategies that support literacy in the content areas/disciplines. Emphasis on interrelated processes of writing, reading, listening and speaking as they relate to content area literacy development. Exploration of the role of the reading/literacy coach in working with classroom teachers, families and communities. (3+0)

ED F678 **Mathematics Methods and Curriculum Development**
2 Credits Offered Fall
Study and application in the classroom of best practices from research-based strategies for the teaching and learning of mathematical concepts, content and methods for students in elementary classrooms with diverse populations. Requires development and classroom implementation of mathematics unit. Concurrent internship required. ***Prerequisites: Admission to the post-baccalaureate elementary licensure program; graduate standing; or permission of instructor.*** Stacked with ED F478. (2+0)

ED F680 **Comparative Education**
3 Credits Offered As Demand Warrants
Analysis of international systems of public education. Issues addressed include social context, ethnicity, gender, ideology, international power, level of development, current issues and problems, and efforts toward reform. Cross-listed with NORS F680. (3+0)

ED F681 **Place-Based Education**
3 Credits Offered Spring
An examination of the relationship between local landscape and community and the development of human perception. Emphasis on the importance of the development of ecologically appropriate community-based educational programs in rural and urban schools. Priority placed on project-centered programs lending themselves to experimental learning opportunities. Includes literature review, discussion, curriculum exploration and design and on-site community exploration of active place-based educational programs. (3+0)

ED F683 **Instruction and Assessment in Reading I**
3 Credits Offered Summer
Examination of standardized literacy assessments and current reading programs and how they are used in schools today. Includes norm-referenced and criterion-referenced tests as well as informal and classroom-based assessments for whole group, small group and individual students. Participants analyze and evaluate assessment and evaluation tools. The links between assessment and instruction are highlighted and their application for classroom teachers, families and the community is also addressed. ***Enrollment restriction: Student must hold a Type A teaching certificate and be admitted to the Master of Education in Reading Program, or permission of instructor.*** (3+0)

ED F684 **Instruction and Assessment in Reading II**
3 Credits Offered Fall
Teaching and assessment of reading with a focus on the reading behaviors of individual students, and effective practices associated with developing students' skills. Includes study of cognitive processes and social factors which contribute to variations in reading ability. The links between assessment and individual instructional plans are highlighted and their application for classroom teachers, families and the community are addressed. ***Enrollment restriction: Student must hold a Type A teaching certificate and be admitted to the Master of Education in Reading Program, or permission of instructor.*** (3+0)

ED F686 **Assessment and Testing in K-12 Public Schools**
3 Credits Offered Spring
Designed to provide students with a basic knowledge of assessment in K-12 public schools. Students will be required to gain a basic understanding of assessment in Alaska and to gain the confidence to interpret, analyze and discuss various, multiple and alternative assessments common in the U.S. public school system, as well as standardized tests. Issues surrounding the history of educational accountability, content standards, instructional objectives and the goals of the K-12 curriculum will be discussed. ***Prerequisites: Admittance to the M.Ed. program, or permission of instructor. Recommended: Successful completion of ED F630; ED F601; ED F612.*** (3+0)

ED F687 **Alaska: Resources, People and Perspectives**
3 Credits Offered Spring
Introduces a broad range of essential Alaska information for educators including information on history, geography, literature, economics and politics. (3+0)

ED F688 **Science Methods and Curriculum Development**
2 Credits Offered Spring
Study and application in the classroom of the best practices from research-based strategies for the teaching and learning of science concepts, content and methods for students in elementary classrooms with diverse populations. Requires development and classroom implementation of science unit.

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Classroom internship required. ***Prerequisites: Admission to the post-baccalaureate elementary licensure program; graduate standing; or permission of instructor.*** Stacked with ED F479. (2+0)

ED F689 **Proseminar in Applied Educational Research**
3 Credits Offered As Demand Warrants
Application of social science and educational research methods to the description and analysis of the student's research topic. The research topic chosen will be the substance of each student's literature review and synthesizing paper. Conceptually integrated with ED F698 (to be taken a subsequent semester), where the final master's project is completed. Completion and approval of the synthesizing paper, by the committee, is required for successful completion of this course. Graded Pass/Fail. ***Prerequisites: Acceptance into an M.Ed. degree program; completion of all required core courses; at least nine credits in the area of concentration.*** (3+0)

ED F690 **Seminar in Cross-Cultural Studies**
3 Credits Offered As Demand Warrants
Investigation of current issues in cross-cultural contexts. Opportunity for students to synthesize prior graduate studies and research. Seminar is taken near the terminus of a graduate program. ***Prerequisites: Advancement to candidacy; permission of student's graduate committee.*** Cross-listed with CCS F690; ANL F690; RD F690. (3+0)

ED F691 **Contemporary Issues in Education**
3 Credits Offered As Demand Warrants
A critical overview of the current status of the field of education. Students will participate in a thorough investigation of select problems, trends and issues that presently characterize the institution of public education. Seminar sessions will focus on student research regarding the development, present impact and potential implications of each topic discussed. (3+0)

EDUCATION: SECONDARY

EDSC F205 **Introduction to Secondary Education**
3 Credits Offered Spring
Introduction to the profession of teaching in middle/high school. Incorporates historical, cultural and sociological factors, with attention to the Alaska context influencing current practice. Students will have the opportunity to explore current issues and reform facing educators today and to observe master teachers in the field. ***Prerequisites: ENGL F111X; sophomore standing; or permission of instructor.*** (3+0+2)

EDSC F402 **Methods of Teaching in the Secondary School**
3 Credits Offered Fall
Focus on methodologies appropriate for teaching middle and high school students in a variety of settings. Candidates explore the structure of schools, the nature of their audiences and will plan, implement and assess both teacher and student centered instructional strategies. Includes Alaska Content/Performance Standards. ***Prerequisites: Admission to the secondary post-baccalaureate licensure program or permission of instructor.*** (3+0)

EDSC F407 **Developing Literacy in the Content Areas**
3 Credits Offered Summer or As Demand Warrants
Preparation for secondary teachers (middle school, junior, and senior high school) to integrate listening, speaking, reading, writing and viewing strategies into a content area of the classroom. Candidates examine and evaluate learning theories related to literacy development and varied methods of instruction and assessment to help design and develop an appropriate pedagogical model for teaching. Completion of EDSC F205 or EDSC F415 is recommended prior to enrollment in this course. ***Prerequisites: ENGL F111X; junior standing or above; or permission of instructor.*** (3+0)

EDSC F414 **Learning, Development and Special Needs Instruction**
3 Credits Offered Summer
Survey of learning theory, adolescent development and special needs instruction. Attention will be given to the cognitive, social and moral theories of development, and to current theories of learning. Consideration will be given to cultural and individual differences among learners including those with special needs. Completion of EDSC F205 or EDSC F415 is recommended prior to enrollment in this course. ***Prerequisites: ENGL F111X; junior standing or above; or permission of instructor.*** Stacked with EDSC F614. (3+0)

EDSC F415 **Foundations of Modern Educational Practice**
3 Credits Offered Summer
Historical, political, sociological and curricular foundations of secondary education in the U.S. with particular attention to Alaska. For pre-service teachers to understand and reflect on the teaching profession at the secondary level and to explore current issues and controversies confronting education at national, state and local levels. ***Prerequisites: ENGL F111X; sophomore standing or permission of instructor.*** (3+0)

EDSC F424 **Culturally Responsive Small School Programs for Alaska**
3 Credits Offered Spring
Exploration of effective programs in small rural schools and in urban schools using school-within-a-school and multi-age models. Emphasis on interdisciplinary models and innovative programs with multi-cultural perspectives. ***Prerequisites: Admission to the secondary post-baccalaureate licensure program or permission of instructor.*** (3+0)

EDSC F431 **Secondary Instruction and Assessment in the Content Area**
3 Credits Offered Fall
Methodologies of instruction and assessment in the candidate's specific content area. Course is taught by content specialists. Discusses current issues, methodologies and teaching strategies specific to the various disciplines. A maximum of nine credits may be earned. ***Prerequisites: Admission to the secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F631. (3+0)

EDSC F432 **English/Language Arts Secondary Instruction and Assessment**
3 Credits Offered Fall
Methodologies of instruction and assessment in English/language arts. Course is taught by content specialists. Includes discussion of current issues, methodologies and teaching strategies specific to English/language arts. ***Prerequisites: Admission to the secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F632. (3+0)

EDSC F433 **Mathematics Secondary Instruction and Assessment**
3 Credits Offered Fall
Methodologies of instruction and assessment in mathematics. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies and practical application lessons for teaching mathematics. ***Prerequisites: Admission to secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F633. (3+0)

EDSC F434 **Science Secondary Instruction and Assessment**
3 Credits Offered Fall
Methodologies of instruction and assessment in science. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, inquiry-based lessons, laboratory experiences and field trips for teaching science. ***Prerequisites: Admission to secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F634. (3+0)

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EDSC F435 Social Studies Secondary Instruction and Assessment
3 Credits Offered Fall
Methodologies of instruction and assessment in social studies. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, project-based activities and community-as-laboratory experiences for teaching social studies. ***Prerequisites: Admission to secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F635. (3+0)

EDSC F436 Art Secondary Instruction and Assessment
3 Credits Offered Fall
Methodologies of instruction and assessment in art. Course is taught by content specialists. Includes discussion of current issues, methodologies and teaching strategies specific to arts. ***Prerequisites: Admission to secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F636. (3+0)

EDSC F437 World Language Secondary Instruction and Assessment
3 Credits Offered Fall, As Demand Warrants
Methodologies of instruction and assessment in world languages. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, and current application of teaching strategies and assessment specific to world languages. ***Prerequisites: Admission to the secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F637. (3+0)

EDSC F442 Technology Applications in Education
3 Credits Offered Spring
Focuses on educational technology as resource for the delivery of instruction to enhance student learning. Designed for participants who will use technology tools to implement and create instructional material in a variety of media to support and assess learning, including distance educational media and methods, and to provide the tools to enhance professional productivity, collaboration and communication. Participants will create a professional electronic portfolio that demonstrates professional development and achievement relative to the ISTE National Technology Standards for Students and Teachers, Alaska Education Standards, and integrated with Standards for Culturally Responsive Schools. ***Prerequisites: Admission to the secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F642. (3+0)

EDSC F457 Multicultural Education and School-Community Relations
4 Credits Offered Spring
Focuses on the philosophy and theories underlying multicultural education as well as the development of positive school community relationships. Encourages pre-service educators to identify their own philosophy and culture and to recognize their cultural background as they instruct, assess and manage their students. Helps educators clarify the value of diversity in the classroom setting. Candidates discern the influence of diversity factors on students' educational careers and the value of diversity to the Alaskan community. Acquaints candidates with teaching in rural Alaska. Explores models for effective teaching, means of village socialization, cultural information and programs that are particularly effective in rural and small school settings. ***Prerequisites: Admission to secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F657. (3+0+1)

EDSC F458 Classroom Organization and Management
3 Credits Offered Fall
Focus on establishment of a positive learning environment, development of a successful discipline plan consistent with an educator's philosophy of education and a review of the major discipline models. Candidates will examine the role that factors such as culture, gender, interest, ability and exceptionality play in student's behavior. Techniques to maintain positive student-teacher interactions in the classroom and establish a positive relationship with parents. Developing strategies to incorporate local knowledge and community culture in to classroom practice. Field experience required. Completion of EDSC 205 or EDSC 415 is recommended prior to enrollment in this course. ***Prerequisites: ENGL F111X; junior standing or above; or permission of instructor.*** Stacked with EDSC F658. (3+0)

EDSC F471 Secondary Teaching: School Internship I and Seminar
3 Credits Offered Fall
Supervised observation and teaching in secondary schools approved by the School of Education. Seminar topics may include special attention to school-community relations, special needs, curriculum development, teaching strategies and the integration of technology across the curriculum. The School of Education may limit enrollment, determine assignments and cancel registration of candidates doing unsatisfactory work. Graded Pass/Fail. Special fees apply. ***Prerequisites: Admission to secondary post-baccalaureate licensure program or permission of instructor.*** (1+0+25)

EDSC F472 Secondary Teaching: School Internship II and Seminar
3 Credits Offered Spring
Supervised observation and teaching in secondary schools approved by the School of Education. Seminar topics may include special attention to school-community relations, special needs, curriculum development, teaching strategies and the integration of technology across the curriculum. The School of Education may limit enrollment, determine assignments and cancel registration of candidates doing unsatisfactory work. Graded Pass/Fail. Special fees apply. ***Prerequisites: Admission to the secondary post-baccalaureate licensure program or permission of instructor.*** (1+0+35)

EDSC F614 Learning, Development and Special Needs Instruction
3 Credits Offered Summer
Survey of learning theory, adolescent development and special needs instruction. Attention will be given to the cognitive, social and moral theories of development, and to current theories of learning. Consideration will be given to cultural and individual differences among learners including those with special needs. Completion of EDSC 205 or EDSC 415 is recommended prior to enrollment in this course. Stacked with EDSC F414. (3+0)

EDSC F631 Secondary Instruction and Assessment in the Content Area
3 Credits Offered Fall
Methodologies of instruction and assessment in the candidate's specific content area. Course is taught by content specialists. Discusses current issues, methodologies and teaching strategies specific to the various disciplines. A maximum of nine credits may be earned. ***Prerequisites: Admission to the secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F431. (3+0)

EDSC F632 English/Language Arts Secondary Instruction and Assessment
3 Credits Offered Fall
Methodologies of instruction and assessment in English/language arts. Course is taught by content specialists. Includes discussion of current issues, methodologies, and teaching strategies specific to English/language arts. ***Prerequisites: Admission to secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F432. (3+0)

EDSC F633 Mathematics Secondary Instruction and Assessment
3 Credits Offered Fall
Methodologies of instruction and assessment in mathematics. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies and practical application lessons for teaching mathematics. ***Prerequisites: Admission to secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F433. (3+0)

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EDSC F634 Science Secondary Instruction and Assessment
3 Credits Offered Fall
Methodologies of instruction and assessment in science. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, inquiry-based lessons, laboratory experiences and field trips for teaching science. ***Prerequisites: Admission to the secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F434. (3+0)

EDSC F635 Social Studies Secondary Instruction and Assessment
3 Credits Offered Fall
Methodologies of instruction and assessment in social studies. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies, project-based activities and community associated laboratory experiences for teaching social studies. ***Prerequisites: Admission to secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F435. (3+0)

EDSC F636 Art Secondary Instruction and Assessment
3 Credits Offered Fall
Methodologies of instruction and assessment in art. Course is taught by content specialists. Includes discussion of current issues, methodologies and teaching strategies specific to arts. ***Prerequisites: Admission to secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F436. (3+0)

EDSC F637 World Language Secondary Instruction and Assessment
3 Credits Offered As Demand Warrants
Methodologies of instruction and assessment in world languages. Course is taught by content specialists. Includes discussion of current issues, diverse methodologies and current application of teaching strategies and assessment specific to world languages. ***Prerequisites: Admission to secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F437. (3+0)

EDSC F642 Technology Applications in Education
3 Credits Offered Spring
Focuses on educational technology as resource for the delivery of instruction to enhance student learning. Designed for participants who will use technology tools to implement and create instructional material in a variety of media to support and assess learning, including distance educational media and methods, and to provide the tools to enhance professional productivity, collaboration and communication. Participants will create a professional electronic portfolio that demonstrates professional development and achievement relative to the ISTE National Technology Standards for Students and Teachers, Alaska Education Standards, and integrated with Standards for Culturally Responsive Schools. ***Prerequisites: Admission to the secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F442. (3+0)

EDSC F657 Multicultural Education and School-Community Relations
4 Credits Offered Spring
Focuses on the philosophy and theories underlying multicultural education as well as the development of positive school community relationships. Encourages pre-service educators to identify their own philosophy and culture and to recognize their cultural background as they instruct, assess, and manage their students. Helps educators clarify the value of diversity in the classroom setting. Candidates discern the influence of diversity factors on students' educational careers and the value of diversity to the Alaskan community. Acquaints candidates with teaching in rural Alaska. Explore models for effective teaching, means of village socialization, cultural information and programs that are particularly effective in rural and small school settings. ***Prerequisites: Admitted to the secondary post-baccalaureate licensure program or permission of instructor.*** Stacked with EDSC F457. (3+0+1)

EDSC F658 Classroom Organization and Management
3 Credits Offered Fall
Focus on establishment of a positive learning environment, development of a successful discipline plan consistent with an educator's philosophy of education and a review of the major discipline models. Candidates will examine the role that factors such as culture, gender, interest, ability and exceptionality play in student's behavior. Candidates will study techniques to maintain positive student-teacher interactions in the classroom and establish a positive relationship with parents. Developing strategies to incorporate local knowledge and community culture into classroom practice. Field experience required. Completion of EDSC F205 or EDSC F415 is recommended prior ot enrollment in this course. Stacked with EDSC F458. (3+0)

EDUCATION: SPECIAL EDUCATION

EDSE F422 Curriculum and Strategies II: High Incidence
3 Credits Offered Spring As Demand Warrants
Methods of instruction and strategies for addressing the needs of students with mild learning and behavior problems. A theoretical basis for selecting approaches is presented along with practical strategies that can be used in the classroom. Field experience required. ***Prerequisites: ED F201; EDSE F482.*** Stacked with EDSE F622. (3+0+1)

EDSE F482 Inclusive Classrooms for All Children
3 Credits
An in-depth understanding of concepts, strategies and issues that surround supporting the needs of students who experience disabilities in the general education classroom. Field experience required. ***Prerequisites: ED F201. Note: Elementary Education students are required to submit Praxis I scores to School of Education prior to enrolling in EDSE F482.*** (3+0)

EDSE F605 Early Childhood Special Education
3 Credits Offered Fall; As Demand Warrants
Survey of philosophical, legal, and programmatic foundations of early childhood special education; characteristics of young children with disabilities; strategies to support young children with disabilities in inclusive settings; development, implementation, and evaluation of Individual Family Services Program (IFSP) plans in culturally diverse settings. Field experience required. (3+0+1)

EDSE F610 Assessment of Students with Disabilities
3 Credits Offered Summer; As Demand Warrants
Techniques and methods used for assessing students with disabilities. Focuses on the purpose of assessment, testing terminology and statistics, and administration and interpretation of formal and informal assessment procedures. Address assessment issues in all Alaskan communities. Field experience required. (3+0+1)

EDSE F612 Curriculum and Strategies I: Low Incidence
3 Credits Offered Summer; As Demand Warrants
Development, implementation and evaluation of Individual Education Program (IEP) plans for students with intensive needs. Provides in-depth understanding of best practice strategies for supporting students with low incidence disabilities in all Alaska communities. Field experience required. (3+0+1)

EDSE F622 Curriculum and Strategies II: High Incidence
3 Credits Offered Fall As Demand Warrants
Development, implementation support and evaluation of Individual Education Program (IEP) plans for students with high incidence disabilities such as attention/deficit hyperactivity disorder, specific learning disabilities, emotional and behavioral disorders, and communication disorders. Provides in-depth understanding of best practice strategies for supporting students with high incidence disabilities. Field experience required. Stacked with EDSE F422. (3+0+1)

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EDSE F624 **Social/Emotional Development, Assessment, and Intervention**
3 Credits Offered Fall; As Demand Warrants
Review current research in both normal and abnormal social/emotional development. Emphasizes the use of research-based practices in assessment and intervention. Explores academic and cultural diversity in the social/emotional growth of students with learning differences. Field experience required. (3+0+1)

EDSE F625 **Teaching Mathematics to Special Learners**
3 Credits Offered Fall; As Demand Warrants
Provides assessment and instructional strategies in mathematics for teachers of students with disabilities. Focuses on standards-based instruction, explicit instruction, curriculum-based assessments and preparation of students for high stakes testing. Field experience required. (3+0+1)

EDSE F632 **Special Education Law: Principles and Practices**
3 Credits Offered Fall; As Demand Warrants
Examines three federal laws that form the foundation of disability law: Individuals with Disabilities Education Act (IDEA) 2004; Section 504 of the Rehabilitation Act of 1973; and the Americans with Disabilities Act. Focuses on substantive principles that underlie procedural requirements including due process issues, case law analysis, policy changes and the creation of a legally defensible Individual Educational Program (IEP). (3+0)

EDSE F633 **Autism: Communication and Social Disorders**
3 Credits Offered Spring; As Demand Warrants
Current methods for assessment and intervention of students with autism. Current issues and trends affecting educational practices are analyzed. Case study method used to make assessment and instructional decisions. Parent communication is emphasized. Field experience required. (3+0+1)

EDSE F640 **Collaboration and Consultative Methods**
3 Credits Offered Spring; As Demand Warrants
How to coordinate with regular education teachers, paraprofessionals, speech language therapists, Alaska Native Education Liaisons, coaches, principals, counselors and outside agencies. (3+0+1)

EDSE F642 **Autism and Asperger Syndrome: Social and Behavioral Issues**
3 Credits Offered Summer; As Demand Warrants
Review functional behavioral assessments, development of behavior plans, use of social stories, social skills and life skills instruction to assist inclusive practices of students with autism or Asperger Syndrome. Field experience required. (3+0+1)

EDSE F677 **Reading Assessment, Curriculum and Strategies**
3 Credits Offered Spring; As Demand Warrants
Use and interpretation of reading assessments. The development of effective, research-based instructional strategies for students with disabilities who experience difficulties reading in any Alaska community. Field experience required. (3+0+1)

EDSE F680 **Special Education Clinical Practice**
3 Credits Offered Fall; As Demand Warrants
Field experience with individuals who have disabilities in public schools and affiliated facilities. Assignments vary across areas of teaching specialization. Includes weekly seminar. Must be taken concurrently with EDSE F681. Field experience required. Special fee. ***Prerequisites: Successful completion of 18 credits in graduate level special education coursework. Must be taken concurrently with EDSE F681*** (3+0)

EDSE F681 **Special Education Portfolio**
3 Credits Offered Fall; As Demand Warrants
Development of special education portfolio based on UAF School of Education conceptual framework, Council for Exceptional Children (CEC) Special Education Standards, Alaska Teacher Standards, and Assembly of Alaska Native Educator (AANE) Guidelines for Preparing Culturally Responsive Teachers for Alaska's Schools. Must be taken concurrently with EDSE F680. ***Prerequisites: Successful completion of 18 credits in graduate level special education coursework. Must be taken concurrently with EDSE F680.*** (3+0)

EDUCATOR: PARA-PROFESSIONAL

EDPA F110 **Introduction to Para-Professional Education**
2 Credits Offered As Demand Warrants
The roles and responsibilities of the para-professional educator, including requirements of confidentiality, school policies and procedures, and rights and responsibilities, of parents students and school staff. ***Recommended: ABUS F170; DEVS F104; ENGL F111X or above.*** (2+0)

EDPA F120 **Classroom Management**
2 Credits Offered As Demand Warrants
Comprehensive course to observe and document a variety of strategies for effective classroom organization, management and communication. Students will discuss and reflect upon the relationship between classroom management and student learning and learn strategies for establishing a positive classroom environment. ***Recommended: ABUS F170; DEVS F104; ENGL F111X or above.*** (2+0)

EDPA F130 **Differentiating Instruction**
2 Credits Offered As Demand Warrants
Different modalities of learning and teaching strategies necessary for meeting individual learners' needs. Course may be repeated once for credit. ***Recommended: ABUS F170; DEVS F104; ENGL F111X or above.*** (2+0)

EDPA F140 **Developing Children as Writers**
1 Credit Offered As Demand Warrants
How to assist teachers in assessing student writing skills and developing children as writers. Para-professionals will become skilled in linking writing to the culture and environment of the child. Course may be repeated twice for credit. Graded Pass/Fail. ***Recommended: ABUS F170; DEVS F104; ENGL F111X or above.*** (1+0)

EDPA F150 **Developing Children as Readers**
1 Credit Offered As Demand Warrants
Developing skills necessary for assisting teachers in using best practices in teaching reading in the elementary classroom. Para-professionals will become skilled in linking reading to the culture and environment of the child. Course may be repeated twice for credit. Graded Pass/Fail. (1+0)

EDPA F160 **Primary Math Methods**
1 Credit Offered As Demand Warrants
Developing the skills necessary for assisting teachers in using best practices in teaching math in the primary classroom. Para-professionals will become skilled in linking mathematics to the culture and environment of the child. Course may be repeated twice for credit. (1+0)

EDPA F170 **Upper Elementary Math Methods**
1 Credit Offered As Demand Warrants
Developing the skills necessary for assisting teachers in using best practices in teaching math in the elementary classroom. Para-professionals will become skilled in linking mathematics to the culture and environment of the child. Course may be repeated three times for credit. Graded Pass/Fail. (1+0)

EDPA F190 **Integrating Local Knowledge into the Curriculum**
1 Credit Offered As Demand Warrants
Learn the prehistory, history and culture of the students' communities and regions, and strategies for integrating this knowledge into the school curriculum. Course may be repeated three times for credit. Graded Pass/Fail. (1+0)

EDPA F199 **Practicum I**
1 Credit Offered As Demand Warrants
Individualized work experience. The student will work as a para-professional in the classroom with a teacher or para-professional over a sustained period

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of at least three weeks. Course may be repeated once for credit. Graded Pass/Fail. ***Recommended: EDPA F110.*** (1+0)

EDPA F210 **Technology in the Classroom**
1 Credit Offered As Demand Warrants
Comprehensive introduction to various ways that technology can be utilized in the classroom. Students will be exposed to practical computer use such as exploring software, electronic grade books, lesson plans, graphics, digital photography, internet use and Internet safety. Course may be repeated once for credit. ***Prerequisites: CIOS F100.*** (0.5+1)

EDPA F250 **Current Topics for Educators**
1 Credit Offered As Demand Warrants
Focus on in-service training offered through school districts to update and train para-professionals and teachers on the use of district curriculum, policies, procedures, etc. Course may be repeated three times for credit. Graded Pass/Fail. (1+0)

EDPA F299 **Practicum II**
1 Credit Offered As Demand Warrants
Individualized work experience. The student will work as a para-professional in the classroom with a teacher or a para-professional over a sustained period of at least three weeks. Course may be repeated once for credit. Graded Pass/Fail. ***Recommended: EDPA F110.*** (1+0)

ELECTRICAL ENGINEERING

EE F102 **Introduction to Electrical and Computer Engineering**
3 Credits Offered Spring
Basic modern devices, concepts, technical skills and instruments of electrical engineering. Special fees apply. ***Prerequisite or Co-requisites: MATH F200X.*** (2+3)

EE F203 **Electrical Engineering Fundamentals I**
4 Credits Offered Fall
Analysis of alternating-current circuits using complex notation and phasor diagrams, resonance, transformers and three-phase circuits. Introduction to network and system analysis. Special fees apply. ***Prerequisites: MATH F200X; EE F102. Prerequisite or Co-requisite: MATH F201X.*** (3+3)

EE F204 **Electrical Engineering Fundamentals II**
4 Credits Offered Spring
Electronics of solid state devices, amplifier design, digital circuits, electromechanics, control systems and instrumentation. Special fees apply. ***Prerequisites: EE F203; MATH F201X. Prerequisite or Co-requisite: MATH F202X.*** (3+3)

EE F303 **Electrical Machinery**
4 Credits Offered Fall
Electromechanical energy conversion principles, characteristics and applications of transformers, synchronous and induction machines, DC machines, and special machines. Special fees apply. ***Prerequisites: EE F204.*** (3+3)

EE F311 **Applied Engineering Electromagnetics**
3 Credits Offered Fall
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: EE F204; MATH F202X; PHYS F212X. Prerequisite or Co-requisite: MATH F302.*** (3+0)

EE F331 **High Frequency Lab**
1 Credit Offered Fall
Laboratory experiments in transmission lines, impedances, bridges, scattering parameters, hybrids and waveguides. Special fees apply. ***Co-requisites: EE F311.*** (0+3)

EE F333 W **Physical Electronics**
4 Credits Offered Fall
Basic properties of semiconductors. Principles of semiconductor devices, diodes, transistors and integrated circuits. Special fees apply. ***Prerequisites: EE F204; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** (3+3)

EE F334 **Electronic Circuit Design**
4 Credits Offered Spring
Application of semiconductor devices in circuit design in computation, automatic control and communication. Special fees apply. ***Prerequisites: EE F333.*** (3+3)

EE F341 **Digital and Computer Analysis and Design**
4 Credits Offered Fall
Modular structure of computer systems. Analysis, design and implementation of combinational and sequential logic machines. Introduction to microprocessor architecture and microprocessor programming. Design with traditional and hardware description language techniques. Special fees apply. ***Prerequisites: CS F201; one year of college physics.*** (3+3)

EE F343 **Digital Systems Analysis and Design**
4 Credits Offered Fall
Fundamental principles and practices of digital design. Analysis, design and implementation of combinational and sequential logic machines. Introduction to microprocessor architecture and microprocessor programming. Analysis of digital data transmission techniques and microprocessor interfacing. Design with traditional and hardware description language techniques. Implementation with both medium and large scale integrated (M/LSI) chips and programmable logic devices (PLDs). Special fees apply. ***Prerequisites: ES F201 or CS F201; EE F204; EE F333. Note: EE F333 may be taken concurrently.*** (3+3)

EE F353 **Circuit Theory**
3 Credits Offered Fall
Analysis by Laplace transform, state variable, and Fourier methods, convolution, frequency selective networks, and two-port circuits. ***Prerequisites: EE F204; ES F201 or CS F201; MATH F202X. Prerequisite or Co-requisite: MATH F302.*** (3+0)

EE F354 **Engineering Signal Analysis**
3 Credits Offered Spring
Analog signals and Fourier transformations. Discrete time signals and FFT. Probability theory and random variables. Random signals and noise. ***Prerequisites: EE F353; MATH F302.*** (3+0)

EE F404 **Electrical Power Systems**
4 Credits Offered Spring
Electrical power transmission and distribution systems, power flow, symmetrical faults, and economic dispatch with computer-aided analysis. Special fees apply. ***Prerequisites: EE F303.*** (3+3)

EE F406 **Electrical Power Engineering**
4 Credits Offered Fall
Economic operation of power systems, symmetrical and unsymmetrical faults, power system protection, dynamic power system stability, and computer-aided fault and transient stability analysis. Special fees apply. ***Prerequisites: EE F404 or equivalent.*** (3+3)

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EE F408 Power Electronics
3 Credits Offered Spring
Study of past and current technology used in power conversion and control equipment. Topics will include the theory and application of thyristors, rectifiers, DC-DC convertors, inverters, resonant converters, AC and DC switches and regulators, power supplies, DC drives and adjustable-speed drives, including variable-frequency drives and cycloconverters. ***Prerequisites: EE F303; EE F333; or permission of instructor.*** Stacked with EE F608. (3+0)

EE F412 Electromagnetic Waves and Devices
3 Credits
Solution of Maxwell's equations for the interaction of electromagnetic waves with conducting and dielectric media. Theory and design of antennas and waveguides. ***Prerequisites: EE F311; EE F331; MATH F302.*** (3+0)

EE F432 Electromagnetics Laboratory
1 Credit
Laboratory experiments with microwave sources, propagating electromagnetic waves, waveguides and antennas. Design, construction and testing of antenna systems. ***Co-requisites: EE F412.*** (0+3)

EE F434 W,O Instrumentation Systems
4 Credits Offered Spring
Analysis and design of instrumentation systems. Static and dynamic characteristics; accuracy, noise and reliability; sensors; signal conditioning; typical measurement systems and microprocessor applications. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; EE F334; EE F343; EE F354; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; senior standing.*** (3+3)

EE F443 Computer Engineering Analysis and Design
4 Credits Offered Spring
Advanced digital design, and principles and practices of computer engineering. Analysis and design of computer architecture and organization. Digital signal processing techniques and hardware. Microprocessor operation, control and interfacing. Design with traditional and hardware description language techniques. Implementation with both medium and large scale integrated (M/LSI) chips and programmable logic devices (PLDs). Special fees apply. ***Prerequisites: EE F341 or EE F343.*** (3+3)

EE F444 W,O Embedded Systems Design
4 Credits Offered Spring
Issues surrounding the design and implementation of microcontroller-based embedded systems. Topics include hardware architecture and glue logic, embedded programs design, analysis, and optimization, hardware/firmware partitioning, firmware architecture and design. Includes laboratory exercises using evaluation board and a complete embedded system design project. Emphasis on robust designs, energy efficiency, and proper documentation. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; EE F343 or EE F341; EE F354; EE F443; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; senior standing. Recommended: CS F301.*** Stacked with EE F645. (3+3)

EE F451 Digital Signal Processing
4 Credits Offered Fall
Time, frequency and Z-transformation domain analysis of discrete time systems and signals; discrete Fourier transformation (DFT) and FFT implementations; FIR/IIR filter design and implementation techniques; discrete time random signals and noise analysis; quantization and round off errors; and spectral analysis. Includes applications to medical, speech, electromagnetic and acoustic signal analysis. Special fees apply. ***Prerequisites: EE F354 or equivalent.*** Stacked with EE F651. (3+3)

EE F461 Communication Systems
4 Credits Offered Fall
Theory, design and implementation of communication systems. Measurement of modulation, noise, channel spectrum, satellite link budget and microwave path design. Special fees apply. ***Prerequisites: EE F354; senior standing.*** (3+3)

EE F463 Communication Networks
3 Credits Offered Spring
Design of voice and data networks. Traffic measurement, network topology, circuit sizing and network performance measures. Tariffs and economic considerations. Cost-performance relationships. Cannot take both EE F463 and EE F464 for credit. ***Prerequisites: EE F354 and Senior standing.*** (3+0)

EE F464 W,O Communication Networks Design
4 Credits Offered Spring
Design of voice and data networks. Traffic measurement, network topology, circuit sizing and network performance measures. Tariffs and economic considerations. Cost-performance relationships. Cannot take both EE F464 and EE F463 for credit. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; EE F354; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; senior standing.*** (3+3)

EE F471 Fundamentals of Automatic Control
3 Credits Offered Spring
Linear system representation by transfer functions, signal flow graphics and state equations. Feedback, time and frequency response of linear systems. Identification, controllability and observability. Stability analysis by Routh-Hurwitz criterion and frequency domain methods. Specifications of higher order linear systems. System design and compensation. ***Prerequisites: EE F353; MATH F302.*** (3+0)

EE F488 Undergraduate Research
1-3 Credits
Advanced research topics from outside the usual undergraduate requirements. ***Prerequisites: Permission of instructor. Recommended: A substantial level of technical/scientific background.*** (0+0)

EE F603 Advanced Electric Power Engineering
3 Credits Offered Fall Even-numbered Years
Selected advanced topics in electric power generation, transmission, use, optimization, stability and economics. ***Prerequisites: EE F404 or permission of instructor.*** (3+0)

EE F604 Electric Power Systems Transients
3 Credits Offered Fall Even-numbered Years
Power system transient analysis, use of the electromagnetic transients program (EMTP), insulation coordination, transient recovery voltage phenomena and resonance conditions. ***Prerequisites: EE F406 or permission of instructor.*** (3+0)

EE F605 Power System Stability and Control
3 Credits Offered Spring Odd-numbered Years
Advanced power system stability analysis, including generator steady state and dynamic models, voltage and power control equipment, load models, network constraints, numerical methods, supplemental control via power system stabilizers and static var systems, and software tools. ***Prerequisites: EE F406 or permission of instructor.*** (3+0)

EE F606 Electric Power System Protection
3 Credits Offered Spring Odd-numbered Years
Principles and applications of electric power systems protective relaying. Topics include fault analysis, relay types, instrumentation transformers, protection schemes, grounding, stability and computer aided design. ***Prerequisites: EE F404; EE F406; or permission of instructor.*** (3+0)

EE F608 Power Electronics
3 Credits Offered Spring
Study of past and current technology used in power conversion and control equipment. Topics will include the theory and application of thyristors, rectifiers, DC-DC converters, inverters, resonant converters, AC and DC switches and regulators, power supplies, DC drives and adjustable-speed drives, including variable-frequency drives and cycloconverters. ***Prerequisites: EE F303; EE F333; graduate standing; or permission of instructor.*** Stacked with EE F408. (3+0)

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EE F610 Linear Systems
3 Credits Offered Fall Even-numbered Years
Methods of representation and analysis for discrete and continuous time. Topics include deterministic, random, continuous and discrete inputs, two-sided Laplace and Z-transforms, discrete and fast Fourier transformers, and state variable theory. ***Prerequisites: EE F354; MATH F302; or permission of instructor.*** (3+0)

EE F611 Waves
3 Credits Offered Spring Odd-numbered Years
Introduction to waves and wave phenomena. Includes electromagnetic, acoustic, seismic, atmospheric and water waves and their mathematical and physical treatment in terms of Hamilton's principle. Discusses propagation, attenuation, reflection, refraction, surface and laminal guiding, dispersion, energy density, power flow, and phase and group velocities. Treatment limited to plane harmonic waves in isotropic media. ***Prerequisites: MATH F302 or MATH F421 or permission of instructor.*** (3+0)

EE F632 Quantum Electronics
3 Credits
Application of quantum mechanical concepts to problems in optical electronics. Study of principles and practices in design and operation of semiconductor devices, lasers and optical propagation systems. Survey of applications in science and engineering. ***Prerequisites: EE F332; EE F333; MATH F302; or permission of instructor.*** (3+0)

EE F634 Microwave Design I
3 Credits Offered Fall Odd-numbered Years
Analysis, design, fabrication and measurement of passive microwave components and circuits using microstrip construction techniques. Theoretical and computer-aided design of transmission lines, power dividers, hybrids, directional couplers and filters. Special fees apply. ***Prerequisites: EE F334; EE F412; EE F432; or permission of instructor.*** (2+3)

EE F635 Microwave Design II
3 Credits Offered Spring Even-numbered Years
Analysis and design of solid-state microwave circuits. Amplifier and oscillator circuits are designed and fabricated using microstrip construction techniques and computer-aided design tools. Special fees apply. ***Prerequisites: EE F634 or permission of instructor.*** (2+3)

EE F643 Advanced Architectures for Parallel Computing
3 Credits Offered Fall Odd-numbered Years
This course covers massively parallel computer architectures and their application for computationally intensive engineering problems. Fundamental hardware concepts and issues in designing such systems are introduced. Compute Unified Device Architecture (CUDA), developed by NVIDIA for the compute engines in their graphic processing units (GPUs), will be used as an example and a practical platform for student assignments. Through assignments and a project students will learn simulation, computational engineering, convolution, correlation, filtering, and similar problems of particular interest to engineering students. ***Prerequisites: CS F201 or ES F201; EE F443 graduate standing or permission of the instructor.*** (3+0)

EE F645 Embedded Systems Design
4 Credits Offered Spring
Issues surrounding the design and implementation of microcontroller-based embedded systems. Topics include hardware architecture and glue logic, embedded programs design, analysis, and optimization, hardware/firmware partitioning, firmware architecture and firmware design. Includes laboratory exercises using evaluation board and a complete embedded system design project. Emphasis on robust designs, energy efficiency, and proper documentation. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with EE F444 (3+3)

EE F651 Digital Signal Processing
4 Credits Offered Fall
Time, frequency and Z-transformation domain analysis of discrete time systems and signals; discrete Fourier transformation (DFT) and FFT implementations; FIR/IIR filter design and implementation techniques; discrete time random signals and noise analysis; quantization and round off errors; and spectral analysis. Includes applications to medical, speech, electromagnetic and acoustic signal analysis. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with EE F451. (3+3)

EE F652 Adaptive Systems and Neural Networks
3 Credits Offered Fall Even-numbered Years
Self-optimizing systems whose performance is improved through contact with their environments. Feedback models for least mean square error adaptation processes. Multiple-layer adaptive neural networks. Competitive learning back propagation, self organization, associative memory. ***Prerequisites: EE F451 or equivalent.*** (3+0)

EE F653 Random Signals and Systems
3 Credits Offered Fall Even-numbered Years
Study of random variables and processes as signals, their interaction with linear and nonlinear systems, their estimation and properties of their estimators, and the detection of such processes in noisy environments. Review of probability and characterization of random processes, linear and nonlinear systems with random excitations, optimum estimation theory, spectral representation and estimation, and detection theory. ***Prerequisites: EE F354; MATH F371; or permission of instructor.*** (3+0)

EE F655 Adaptive Filters
3 Credits Offered Spring Even-numbered Years
Study to self-designing filters which recursively update depending on the statistics of the input data for optimum performance. Topics will include foundational material in probability of stochastic processes, spectral analysis, linear optimum filtering. Wiener-Hopf filters, Yule-Walker equations, forward and backward linear predictors, method of steepest descent, least squares techniques, and auto- regressive filters. ***Prerequisites: EE F451 or permission of instructor.*** (3+0)

EE F656 Space Systems Engineering
3 Credits Offered Spring Odd-numbered Years
A multidisciplinary team of students will perform a preliminary design study of a major space system. Design considerations will include requirements for project management, spacecraft design, power, attitude control, thermal control, communications, computer control and data handling. The students will present their final design in a written report and a public seminar. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with ME F656. (3+0)

EE F662 Digital Communication Theory
3 Credits Offered Fall Even-numbered Years
Probability in communication systems, power spectral density, baseband formatting, bandpass modulation and demodulation, link analysis, coding and channel models. Sections of this course offered in Anchorage have an additional fee. ***Prerequisites: EE F461 or permission of instructor.*** (3+0)

EE F665 Antennas
3 Credits Offered Spring Odd-numbered Years
Fundamental principles of antenna theory. Application to the analysis, design and measurement of many different antenna structures. ***Prerequisites: EE F412; EE F461; or permission of instructor.*** (3+0)

EE F667 Satellite Communications
3 Credits Offered Fall Odd-numbered Years
Satellite orbital parameters, satellite hardware, link budgets, modulations and multiple access techniques, operational considerations, operating and proposed satellite communication systems. ***Prerequisites: EE F461; graduate standing; or permission of instructor.*** (3+0)

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EE F669 **Radiowave Propagation**
3 Credits Offered Spring Even-numbered Years
A study of the effects of the earth, atmosphere, ionosphere and atmospheric hydrometeors such as raindrops, snow and hail on the propagation of radiowaves. Satellite to earth propagation effects will be emphasized. ***Prerequisites: EE F461; graduate standing; or permission of instructor.*** (3+0)

EE F671 **Digital Control Systems**
3 Credits Offered As Demand Warrants
Study of digital control theory. Topics will include signal conversion, Z-transforms, state variable techniques, stability, time and frequency domain analysis and system design. ***Prerequisites: EE F471 or permission of instructor.*** (3+0)

EE F673 **Modern Control Engineering**
3 Credits Offered Fall Even-numbered Years; As Demand Warrants
Introduction to state space systems in the study of dynamical systems; brief review of modeling and basic concepts of classical control theory and matric algebra; stability analysis of feedback systems; design of output and state feedback control systems; controllability and observability of dynamical systems; state feedback; state observers; robust control; optimal control. Analysis and design using MATLAB and SIMULINK; demonstrations on PUMA 560 and Hardware-in-the-Loop simulator test-beds. ***Prerequisites: EE F471 or equivalent; permission of instructor.*** (3+0)

ELECTRONICS TECHNOLOGY

ELT F101 **Basic Electronics: DC Physics**
4 Credits Offered As Demand Warrants
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. Special fees apply. Special fees apply. ***Prerequisites: Placement in DEVM F050 or TTCH F131 or permission of instructor.*** (4+0)

ELT F102 **Basic Electronics: AC Physics**
4 Credits Offered As Demand Warrants
Principles of alternating current, vectors, phase relationships, inductive and capacitive reactance and impedance. AC circuit analysis, series and parallel resonant circuits, transformers and network analysis. Special fees apply. ***Prerequisites: ELT F101, DEVM F105 which can be taken concurrently with this class, or permission of instructor.*** (4+0)

ELT F111 **Amateur Radio Licensing**
1-3 Credits Offered As Demand Warrants
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 already licensed. (1-3+0)

ELT F171 **National Electric Code Study**
3 Credits Offered As Demand Warrants
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. ***Prerequisites: ELT F102 or permission of instructor. Recommended: DEVM F105 or PRT F155.*** (3+0)

ELT F246 **Electronic Industrial Instrumentation**
3 Credits Offered As Demand Warrants
Methods of analog electronic signal transmission. Discussion of the details of several pieces of equipment in-depth, providing practice in establishing correct interconnections. Basic concepts used in troubleshooting this type of equipment are also introduced. ***Prerequisites: ELT F102 or permission of instructor. Recommended: DEVM F105 or PRT F155.*** (3+0)

EMERGENCY MEDICAL SERVICES

EMS F150 **Wilderness Emergency Care**
3 Credits As Demand Warrants
Introduction to medicine in a remote setting. Assessment and management of life-threatening and non-threatening injuries, common medical emergencies and a variety of environmental injuries. Academically challenging training includes basic anatomy and physiology, appropriate short-term to multi-day patient care, the incident command system and evacuation and considerations. (20+0)

EMS F152 **Emergency Trauma Training First Responder**
3 Credits
Basic emergency care knowledge and skills for the student who will provide the first emergency care. The objective of the first person on the emergency scene is to recognize the needs of the victim and deliver quality care to the patient, minimizing discomfort and preventing further complications. (2+2)

EMS F154 **Emergency Trauma Training Refresher**
1 Credit Offered Fall
For individuals who have been previously certified in Emergency Trauma Training (40 hrs.). Certification is valid for two years. ***Prerequisites: EMS F152 or ETT Certification which may not be expired more than one calendar year.*** (1+0)

EMS F160 **Basic Trauma Life Support**
1 Credit Offered As Demand Warrants
Provides the first line of life support to the trauma patient as encountered in situ and to maintain life until the patient is handed off to the next level of medical help. Graded Pass/Fail. (1+0)

EMS F168 **ETT to EMT Bridge Course**
3 Credits Offered As Demand Warrants
Allows certified emergency trauma technician (ETT) to progress to the emergency medical technician in an efficient manner. Credits the ETT with the knowledge and skills learned in primary training. ***Prerequisites: Current Emergency Trauma Technician certificate.*** (0.5+5)

EMS F170 **EMT: Emergency Medical Technician I**
6 Credits Offered As Demand Warrants
Basic life support such as splinting, hemorrhage control, oxygen therapy, suction, CPR and use of automated external defibrillators (AEDs). EMT I is the foundation of all emergency medical training. Mastering of EMT I level knowledge and techniques must occur before moving on to advanced levels. Cross-listed with ARSK F170. (4+4)

EMS F172 **EMT: Emergency Medical Technician I Refresher**
1 Credit Offered Fall
Review of basic skills and emergency medical procedures at the Basic EMT I level. Covers emergency medical care procedural changes, newly developed equipment and its use, changes in state licensure or other medical-legal requirements. Also Offered Pass/Fail as EMS F172P. ***Prerequisites: EMT I certification.*** (0.5+1)

EMS F173 **EMT I Internship**
6 Credits Offered Spring
Synthesize cognitive and psychomotor skills from the EMT I course and observe skills performed by Advanced Care Providers. Designed for individuals planning to participate in the CTC paramedic program in the fall semester. Interns will perform all aspects of emergency care for an Alaska certified EMT I under the guidance of an Advanced Care Provider. Graded Pass/Fail. ***Prerequisites: EMS F170; concurrent EMT I certification; permission of instructor.*** (0+16)

EMS F176 **Aeromedical Evacuations in Alaska**
1 Credit Offered Fall
History of Alaska aeromedical transport; physiological aspects of pressure and atmosphere; physical effects of flight on the patient and escort; aircraft and

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equipment considerations; legal aspects of air transport; effects of aeromedical transport on specific medical situations. Graded Pass/Fail. Special fees apply. ***Prerequisites: EMT I certification or permission of instructor.*** (1+0)

EMS F181 **Clinical Rotation I**
4 Credits Offered Fall, As Demand Warrants
Perform paramedic skills in the hospital setting under the guidance of a clinical preceptor. Rotations include the emergency department, ICU, operating room, respiratory therapy, and mental health units. Provides an in-depth look at the respiratory, circulatory and nervous systems. Includes interpretation of cardiac rhythms and advanced cardiac life support. Special fees apply. ***Prerequisites: Permission of program coordinator. Note: Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.*** (0+4+4)

EMS F183 **Clinical Rotation II**
4 Credits Offered Spring, As Demand Warrants
Perform paramedic skills in the hospital setting under the guidance of a clinical preceptor. Rotations include the emergency department, ICU, OR, labor and delivery, pediatrics and geriatrics. ***Prerequisites: EMS F181. Note: Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.*** (0+4+4)

EMS F251 **Basic Life Support Instructor**
1 Credit Offered As Demand Warrants
The American Heart Association Basic Life Support instructor's course provides the knowledge and skills necessary to instruct and evaluate potential BLS providers. Balances what information to teach with how to teach BLS. The BLS instructor student will be monitored during the first class she/he teaches by the BLS instructor trainer. Graded Pass/Fail. Special fees apply. ***Prerequisites: Basic Life Support certified; permission of program coordinator.*** (1+0)

EMS F253 **Alaska EMT Instructor Orientation**
3 Credits Offered As Demand Warrants
Adult education and learning environment, as well as regulations governing the teaching of EMTs in the state of Alaska. This course is designed to be an intensive learning experience with extensive out-of-class preparation. Proficiency with EMT skills and knowledge prior to entering this training program is expected as there will be no review of EMT skills or knowledge during this class. Graded Pass/Fail. ***Prerequisites: Current EMT I, II, III or MICP certification and three years of experience; evidence of successful completion of state of Alaska practical exam and written exam with a score of 90% within the last 12 months. Recommended: FIRE F216.*** (3+0)

EMS F257 **Arctic Survival**
3 Credits Offered Spring
Principles, procedures, techniques and equipment necessary to survive extreme arctic conditions and to assist in safe recovery. Lab required. Special fees apply. Cross-listed with AVTY F231. (3+0)

EMS F261 **EMT: Emergency Medical Technician II**
3 Credits Offered Spring
Advancement of EMT I skills and knowledge through advanced techniques in fluid therapy and advance airway management. Includes use of specific drug therapy. Special fees apply. ***Prerequisites: EMT I certification and proof of 10 patient contacts as an EMT I.*** (2+2)

EMS F265 **Emergency Medical Technician III**
2 Credits Offered Fall
Introduction to basic cardiac anatomy and physiology, cardiac electrophysiology, recognition and treatment of basic lethal arrhythmias, use of monitor, defibrillator and pharmacological management. Special fees apply. ***Prerequisites: EMT II certification and proof of 10 patient contacts and 10 venipunctures as an EMT II.*** (0.5+3)

EMS F267 **Advanced Medical Procedures**
1 Credit Offered As Demand Warrants
State requirements for recertification at the EMT II or III levels. Reviews advanced medical skills and emergency medical procedures at the EMT II and III levels. Emergency medical care procedural changes, newly developed equipment and its use, changes in state certification and other medical-legal requirements. Course may be repeated ten times but not for credit. Graded Pass/Fail. Special fees apply. ***Prerequisites: Current EMT II or III certification.*** (0.5+1)

EMS F280 **Paramedicine I**
12 Credits Offered Fall, As Demand Warrants
Introduction to emergency medical services, the roles and responsibilities of a paramedic and medical/legal/ethical issues. Basic pathophysiology, pharmacology, venous access and advanced airway management techniques. Also includes an in-depth look at the circulatory, respiratory and nervous systems which includes interpretation of cardiac rhythms, pharmacology and advanced cardiac life support. Note: Student must apply for admission into the Paramedic Academy. Applications are reviewed by the Paramedic Advisory board. Special fees apply. ***Prerequisites: EMS F170. Recommended: HTLH F114 or equivalent. Note: Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.*** (8+8)

EMS F282 **Paramedicine II**
12 Credits Offered Spring, As Demand Warrants
Assessment and management of medical emergencies, geriatrics, pediatrics and traumatic injuries. Includes pediatric advanced life support and basic trauma life support certifications. Special fees apply. ***Prerequisites: EMS F280. Note: Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.*** (8+8)

EMS F283 **Paramedic Internship**
12 Credits Offered Spring
Prehospital field experience under the guidance of a paramedic preceptor on an advanced life support ambulance. Interns perform all aspects of paramedic care. Special fees apply. ***Prerequisites: EMS F183; EMS F277. Note: Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.*** (0+24)

EMS F287 **Paramedic Refresher**
3 Credits Offered As Demand Warrants
Integration of paramedicine knowledge and techniques with evaluation of applied skills. ***Prerequisites: Current State of Alaska or National Registry paramedic license. Note: Student must have the strength to be able to move patients, sufficient vision to assess the condition of the patient and the dexterity to perform the skills of a paramedic.*** (2+2)

ENGINEERING AND SCIENCE MANAGEMENT

A per-semester fee for computing facilities will be assessed for one or more courses. This fee is in addition to any materials fees.

ESM F422 **Engineering Decisions**
3 Credits Offered Spring
Risk and uncertainty in engineering decisions. Basic applied probability and statistics, data analysis, regression analysis and time series. Practical applications of decision tools: linear programming, inventory analysis, queuing, network models and utility theory. Engineering judgment and uncertainty. Public safety and ethics. ***Recommended: Calculus through MATH F302.*** Stacked with ESM F622. (3+0)

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ESM F450 W Economic Analysis and Operations
3 Credits
Fundamentals of engineering economy, project scheduling, estimating, legal principles, professional ethnics and human relations. Note: Not offered for credit toward the M.S. degree in Engineering Management or Science Management. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; ES F201 or CS F201; senior standing in engineering; or permission of instructor. Note: Undergraduate engineering students who are taking graduate ESM courses as technical electives should have completed or be concurrently enrolled in ESM F450.*** (3+0)

ESM F601 Managing and Leading Engineering Organizations
3 Credits Offered Fall Even-numbered Years
Leadership knowledge and skills as applied to motivation, direction and communication within engineering and technical organizations, and their relations with other organizations and the public. Leadership training complements management knowledge and activities such as organizational structures, planning, monitoring, directing and controlling. The general tools of management are reviewed including management theory, communications, conflict management and resolution. ***Recommended: B.S. degree in engineering or physical science or permission of instructor.*** (3+0)

ESM F605 Engineering Economic Analysis
3 Credits Offered Spring Even-numbered Years
The economic basis of engineering decisions. Graduate level studies of capital investment analysis techniques, including present worth, annual cash flow and rate of return. Applications to replacement problems, benefits/cost analysis and capital budgeting. Consideration of impacts of depreciation accounting, income taxes and inflation. Risk and uncertainty in economic decisions. Simulation. ***Recommended: Graduate standing.*** (3+0)

ESM F608 Legal Principles for Engineering Management
3 Credits Offered Fall Odd-numbered Years
Those aspects of law specifically related to technical management. Contracts, sales, real property, business organization, labor, patents and insurance. ***Recommended: Graduate standing.*** (3+0)

ESM F609 Project Management
3 Credits Offered Spring Even-numbered Years
Organizing, planning, scheduling and controlling projects. Use of CPM and PERT; computer applications. Case studies of project management problems and solutions. ***Recommended: Graduate standing or permission of instructor.*** (3+0)

ESM F620 Statistics for ESM
3 Credits Offered As Demand Warrants
Forecasting applications and technique — technological, time series, judgmental and regression; decision trees; Bayesian statistics; utility theory with trade-offs between expected value and risk in decision making; bidding strategies; and data analysis. ***Recommended: MATH F202X; STAT F200X.*** (3+0)

ESM F621 Operations Research
3 Credits Offered As Demand Warrants
Mathematical techniques for aiding technical managers in decision making. Linear programming, transportation problem, assignment problem, network models, PERT/CPM, inventory models, waiting line models, computer simulation, dynamic programming. Emphasis on use of techniques in actual technical management situations. Computer applications. ***Recommended: MATH F202X; STAT F200X.*** (3+0)

ESM F622 Engineering Decisions
3 Credits Offered Spring
Risk and uncertainty in engineering decisions. Basic applied probability and statistics, data analysis, regression analysis and time series. Practical applications of decision tools: linear programming, inventory analysis, queuing, network models, utility theory. Engineering judgment and uncertainty. Public safety and ethics. A class project and paper are required. ***Recommended: Calculus through MATH F302.*** (3+0)

ESM F684 Engineering Management Project
3 Credits
Comprehensive study of an actual engineering management problem resulting in reports and presentations which include recommendations for action. ***Prerequisites: Graduate standing in Engineering Science Management or permission of instructor.*** (3+0)

ENGINEERING SCIENCE

A per-semester fee for computing facilities will be assessed for one or more CEM courses. This fee is in addition to any materials fees.

ES F101 Introduction to Engineering
3 Credits
Overview of the engineering profession and introduction to the fields of engineering. Basic concepts from engineering, physics and mathematics applied to engineering problem solving. Basic skills required of engineers, including an introduction to engineering communications: word processing, descriptive geometry, orthographic and isometric drawings, graphs, computer graphics and use of spreadsheets. Special fees apply. ***Prerequisites: MATH F107X. Prerequisite or Co-requisite: MATH F108 or calculus placement.*** (2+2)

ES F166 Electric Car Conversion
2 Credits Offered Summer
An introduction to the principles of electrical vehicle propulsion systems. Fundamentals of electrical motors, electrical motor controls, electrical energy storage systems and automotive power-train design. Students will conduct practical design projects culminating with a complete electric car conversion. Relevant codes and standards will be emphasized. (1+3)

ES F201 Computer Techniques
3 Credits
Basic computer programming, in C/C++, with applications from all fields of engineering. Introduction to MATLAB. ***Prerequisites: MATH F107X and MATH F108 OR enrollment in MATH F200X.*** (2+3)

ES F208 Mechanics
4 Credits
Engineering-oriented coverage of statics and dynamics. Vector methods used where appropriate. ***Prerequisites: ES F101 or GE F101 or MIN F103 or PETE F104; MATH F201X; PHYS F211X.*** (3+3)

ES F209 Statics
3 Credits
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. ***Prerequisites: ES F101. Prerequisite or Co-requisites: MATH F201X; PHYS F211X.*** (3+0)

ES F210 Dynamics
3 Credits
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. ***Prerequisites: ES F209.*** (3+0)

ES F301 Engineering Analysis
3 Credits
Application of mathematical tools to typical engineering design problems. Selected topics from all fields of engineering. ***Prerequisites: ES F201; MATH F302.*** (3+0)

ES F307 Elements of Electrical Engineering
3 Credits Offered Fall
Elementary circuits and theorems, natural, forced and steady state response, principles of electronics, circuit models and system parameters, elements of measurement and instrumentation, characteristics of DC machines, and AC

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machines and transformers. ***Prerequisites: MATH F202X or permission of instructor.*** (3+0)

ES F331 Mechanics of Materials
3 Credits
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 and indeterminate cases. ***Prerequisites: ES F208 or ES F209; MATH F201X.*** (3+0)

ES F341 Fluid Mechanics
4 Credits
Statics and dynamics of fluids; energy and momentum principles. Dimensional analysis; flow in open channels, closed conduits and around submerged bodies. Special fees apply. ***Prerequisites: ES F208 or ES F210; MATH F201X.*** (3+3)

ES F346 Basic Thermodynamics
3 Credits
Thermodynamic systems, properties, processes and cycles. Fundamental principles of thermodynamics (first and second laws), and elementary applications. ***Prerequisites: MATH F201X; PHYS F211X.*** (3+0)

ENGLISH

It is the policy of the English Department to drop from the class roll any student who fails to attend either of the first two meetings of a basic course (ENGL F111X, ENGL F200X, ENGL F211X, ENGL F213X) regardless of whether or not fees have been paid.

Developmental English

DEVE F060 Preparatory College Writing I
3 Credits
Intensive work in the process of writing and revising to improve one's writing skills. ***Prerequisites: Appropriate placement test scores or permission of instructor.*** (3+0)

DEVE F068 College Writing Skills
1-3 Credits
Individualized instruction in written language skills. Open entry/open exit, one credit modules in spelling/vocabulary, writing and grammar usage. Enrollment in one or more modules based on diagnosed need or student decision; may be repeated. Does not fulfill degree requirements in written communications or humanities. Graded Pass/Fail. (1-3+0)

DEVE F070 Preparatory College Writing II
3 Credits
Instruction in writing to improve students' fluency, accuracy and communication skills. Preparation for ENGL F111X. Also available via Independent Learning. ***Prerequisites: Appropriate placement test scores or permission of instructor.*** (3+0)

DEVE F109 Preparatory College Writing III
3 Credits
Strengthen preparatory college writing skills they need for ENGL F111X, including research, writing and revising, and critical reading skills. ***Prerequisites: Appropriate placement test scores or permission of instructor.*** (3+0)

English

ENGL F104 Institute on Language, Thought and Culture
3 Credits Offered As Demand Warrants
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. (3+0)

ENGL F111X Introduction to Academic Writing
3 Credits
Instruction and practice in written inquiry and critical reading. Introduction to writing as a way of developing, exploring and testing ideas. Concentration on research methods and techniques. Available via Independent Learning. ***Prerequisites: Placement examination.*** (3+0)

ENGL F200X World Literature (h)
3 Credits
Introduction to reading and appreciation of a wide variety of literary texts from different cultures. Includes exposure to a variety of approaches to myth, poetry, story telling 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. ***Prerequisites: ENGL F111X or placement in ENGL F211X/ENGL F213X; sophomore standing; or permission of instructor.*** Cross-listed with FL F200X. (3+0)

ENGL F211X Academic Writing about Literature
3 Credits
Instruction in writing through close analysis of literature. Research paper required. Strongly recommended for English and other humanities majors. Also available via Independent Learning. ***Prerequisites: ENGL F111X or its equivalent. Recommended: Sophomore standing.*** (3+0)

ENGL F212 Business, Grant, and Report Writing
3 Credits Offered As Demand Warrants
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. Also available via Independent Learning. ***Prerequisites: ENGL F111X.*** (3+0)

ENGL F213X Academic Writing about the Social and Natural Sciences
3 Credits
Instruction in critical reading and argumentative writing by reading and responding to essays from the social and natural sciences. Concentration on the research methods and techniques necessary to create an extended written argument. Also available via Independent Learning. ***Prerequisites: ENGL F111X or equivalent. Recommended: Sophomore standing.*** (3+0)

ENGL F217 Introduction to the Study of Film (h)
3 Credits Offered Spring
An appreciation course designed to introduce the student to the various forms of cinematic art with special emphasis on humanistic and artistic aspects. ***Prerequisites: ENGL F111X.*** Cross-listed with FLM F217; JRN F217. (2+2)

ENGL F218 Themes in Literature (h)
3 Credits Offered As Demand Warrants
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 may be repeated for credit when content varies. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

ENGL F219 Aleut Narrative Art
3 Credits Offered As Demand Warrants
Introduction to and survey of the oral and written literature of the Unangan, the Aleut people. All works in English translation, although some supplementary materials in the Aleut language (eastern and western dialects). Offered at the Interior Aleutian campus. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

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ENGL F230 English Language Proficiency
3 Credits Offered Fall
Intensive listening, speaking, reading and writing in English. Especially recommended for all students for whom English is a foreign language. This course does not meet general degree requirements in written communications and is not classified as a humanities. Course may be repeated once for credit. Note: Open only to students for whom English is a foreign language. ***Prerequisites: Permission of instructor.*** (3+0)

ENGL F231 English Language Proficiency
3 Credits Offered Spring
Intensive listening, speaking, reading and writing in English. Especially recommended for all students for whom English is a foreign language. This course does not meet general degree requirements in written communications and is not classified as a humanities. Course may be repeated once for credit. ***Prerequisites: Permission of instructor. Note: Open only to students for whom English is a foreign language.*** (3+0)

ENGL F271 Introduction to Creative Writing: Fiction (h)
3 Credits
Forms and techniques of fiction for beginning students; discussion of students' work in class and in individual conferences. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

ENGL F272 Introduction to Creative Writing: Poetry (h)
3 Credits Offered Fall and Spring
Forms and techniques of poetry for beginning students; discussion of students' work in class and in individual conferences. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

ENGL F273 Introduction to Creative Nonfiction
3 Credits Offered Spring
Forms and techniques of nonfiction writing in memoir and the personal essay for beginning students; discussion of students' work in class and in individual conferences. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

ENGL F280 Introduction to Colonial and Postcolonial Literature (h)
3 Credits Offered Fall Even-numbered Years
Includes readings from the literature of formerly colonized nations. Texts may be chosen from African, Asian, American and Pacific Rim cultures. Although the colonial and postcolonial periods will be central to our investigations, precolonial and ancient cultures may also be considered for the purpose of establishing cultural perspectives. May be repeated twice for credit. ***Prerequisites: ENGL F211X or ENGL F213X. Recommended: ENGL F200X.*** (3+0)

ENGL F290 Summer Reading Program (Honors) (h)
2 Credits Offered Fall
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. ***Prerequisites: ENGL F111X; enrollment in the Honors Program; or permission of instructor.*** (2+0)

ENGL F301 Continental Literature in Translation: The Ancient World (h)
3 Credits Offered Fall Even-numbered Years
Readings from ancient Mesopotamian, Greek and Roman texts: the classical background out of which western literary tradition has risen. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

ENGL F302 Continental Literature in Translation: Medieval and Renaissance (h)
3 Credits Offered Fall Odd-numbered Years
Readings from the works of such writers as Dante, Macchiavelli, Petrarch, Boccaccio, Rabelais, Margherite de Navarre, Calderon della Barca and Cervantes. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

ENGL F306 Survey of American Literature: Beginnings to the Civil War (h)
3 Credits Offered Fall
Comprehensive study of American thought as reflected in the works of early explorers, Calvinists, Rationalists and Transcendentalists. Also available via Independent Learning. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

ENGL F307 Survey of American Literature: Civil War to the Present (h)
3 Credits Offered Spring
Comprehensive study of American thought as reflected in the writers of Realism, Naturalism, Modernism, and Post-modernism. Also available via Independent Learning. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

ENGL F308 Survey of British Literature: Beowulf to the Romantic Period (h)
3 Credits Offered Fall
Survey of writers and works in Old and Middle English, including Chaucer, through Elizabethan period (Shakespeare), Restoration, and Neoclassic period of the 18th century. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

ENGL F309 Survey of British Literature: Romantic Period to the Present (h)
3 Credits Offered Spring
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. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

ENGL F310 Literary Criticism (h)
3 Credits Offered Spring
History and principles of literary criticism, from earliest days to present. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

ENGL F313 W Writing Nonfiction Prose (h)
3 Credits Offered Spring
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: ENGL F111X; ENGL F211X or ENGL F213X; junior standing; or permission of instructor.*** (3+0)

ENGL F314 W,O/2 Technical Writing (h)
3 Credits
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. Also available via Independent Learning. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; junior standing; or permission of instructor.*** (3+0)

ENGL F317 Traditional English Grammar (h)
3 Credits Offered Fall
Identification and usage of the more common types of phrase and sentence structures. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

ENGL F318 Modern English Grammar (h)
3 Credits Offered Spring
Structure of current English as seen through traditional and contemporary grammatical theories. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

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ENGL F333 **Women's Literature** (h)
3 Credits Offered Fall
Reading, discussing and analyzing literary works dealing with the social, cultural and political implications of patriarchal structures and traditions from the perspective of feminist theory and criticism. Focus may be on a particular theme, period or genre, but readings will include both primary and secondary texts. ***Prerequisites: ENGL F111X. Recommended: ENGL F211X.*** Cross-listed with WGS F333. (3+0)

ENGL F340 **Contemporary Native American Literature** (h)
3 Credits Offered Fall
Contemporary Native American writing in English, including novels, short stories, poetry and plays. Examples of Native American film when related to a written work. Works discussed in relation to cultural contexts and interpretations. ***Prerequisites: ENGL F111X or permission of instructor.*** Cross-listed with ANS F340. (3+0)

ENGL F341 **Contemporary Alaska Native Literature** (h)
3 Credits Offered As Demand Warrants
Contemporary Alaska Native literature including novels, short stories, poetry and plays. Bibliography, genres and viewpoints, structural and thematic features of stories. May concentrate on specific regional areas of the state. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

ENGL F347 **Voices of Native American Peoples** (h)
3 Credits Offered Spring Even-numbered Years
Exploration of the forms by which Native American peoples have narrated their life experiences. Includes oral narratives, written autobiographies, memoirs and speeches, and an introduction to the social, historical and cultural content surround these texts. Readings selected from all of North America with an emphasis on Alaska Natives. ***Prerequisites: ENGL F111X.*** Cross-listed with ANS F347. (3+0)

ENGL F349 **Narrative Art of Alaska Native Peoples (in English Translation)** (h)
3 Credits Offered Fall Even-numbered Years
Traditional and historical tales by Aleut, Eskimo, Athabascan Eyak, Tlingit, Haida and Tsimshian storytellers. Bibliography, Alaska Native genres and viewpoints, and structural and thematic features of tales. Also available via Independent Learning. ***Prerequisites: ENGL F111X or permission of instructor.*** Cross-listed with ANS F349. (3+0)

ENGL F350 **Literature of Alaska and the Yukon Territory** (h)
3 Credits Offered Spring Odd-numbered Years
Representative fiction, verse and nonfiction dealing with Alaska and the Yukon Territory. Also available via Independent Learning. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

ENGL F360 **Multi-Ethnic Literatures of the United States** (h)
3 Credits Offered Fall Odd-numbered Years
Ethnic American writings. Includes Native American, Asian American, Hispanic American, African American, Jewish American, immigrant and other traditions of literary expression. Ethnic writings will be compared to mainstream American literature. ***Prerequisites: ENGL F111X or permission of instructor.*** (3+0)

ENGL F371 W **Topics in Creative Writing** (h)
3 Credits
Practice and guidance in writing fiction, poetry, drama or essays. Students' work read and discussed in class and in conference with the instructor. Close study of the techniques of established writers. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; ENGL F271 or ENGL F272; or permission of instructor.*** (3+0)

ENGL F380 **Topics in Colonial and Postcolonial Literature** (h)
3 Credits Offered Spring Even-numbered Years
Focus on a particular topic in selected colonial and postcolonial literary texts. Readings will be chosen for their relevance to a particular theme, to be announced by the instructor. Topic will vary from one semester to another, but the goal will be to explore the significance and importance of the chosen topic as it manifests itself in the literature. Readings and discussions will foster in-depth understanding of texts dealing with the chosen topic. Possible topics might include: war and peace, economic imperatives, environmental perspectives, sickness and health, and gender issues. May be repeated three times for credit. ***Prerequisites: ENGL F200X. Recommended: ENGL F280.*** (3+0)

ENGL F410 W,O/2 **Studies in American Literature to 1900** (h)
3 Credits Offered Every Third Spring
Intensive study of variable topics in American literature to 1900. May focus on themes such as race or war in literature; a specific period such as novels of the 1850s; particular genres such as horror, Westerns, or travel writing; an important author; or an aspect of contemporary literary or cultural theory. Intensive readings and research in contemporary literary theory and criticism will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies. ***Prerequisites: COMM F131X or COMM F141X; ENGL F211X or ENGL F213X or permission of instructor.*** (3+0)

ENGL F414 W **Research Writing** (h)
3 Credits Offered Fall
Practice in reporting primary and secondary research in the forms and styles appropriate to the student's field. Preference given to seniors. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or their equivalent or permission of instructor.*** (3+0)

ENGL F415 W,O/2 **Studies in 17th Century and 18th Century British Literature** (h)
3 Credits Offered Every Third Fall
Intensive study of variable topics in 17th century and 18th century British literature. May focus on themes or subjects such as gender or war in literature; a specific period such as literature of the 1660s; particular genres such as the gothic, satire, the sentimental novel; an important author; or an aspect of contemporary literary or cultural theory. Intensive readings and research in contemporary literary theory and criticism will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies. ***Prerequisites: COMM F131X or COMM F141X; ENGL F211X or ENGL F213X; or permission of instructor.*** (3+0)

ENGL F420 W,O/2 **Studies in Medieval and 16th Century British Literature** (h)
3 Credits Offered Every Third Fall
Intensive study of variable topics in medieval and 16th Century British literature. Themes may include Arthurian literature, fin'amor (courtly love), orality and literacy, and the Otherworld and other imaginary lands. Intensive readings and research in both primary texts and contemporary literary theory and criticism will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies. ***Prerequisites: COMM F131X or COMM F141X; ENGL F211X or ENGL F213X or permission of instructor.*** (3+0)

ENGL F422 W,O/2 **Shakespeare: History, Plays and Tragedies** (h)
3 Credits Offered Fall
Major chronicle plays and tragedies, including significant criticism. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor. Recommended: ENGL F308 desirable but not required.*** (3+0)

ENGL F425 W,O/2 **Shakespeare: Comedies and Non-Dramatic Poetry** (h)
3 Credits Offered Spring
Major comedies and non-dramatic poems, including significant criticism. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor. Recommended: ENGL F308 desirable but not required.*** (3+0)

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ENGL F427 **Topics in Film Studies** (h)
3 Credits Offered Spring
Intensive study of variable topics in film studies. May focus on themes such as race or war in film; a specific period such as films of the 1940's: particular genres such as horror, film noir, or the musical, an important director, or an aspect of contemporary film theory. Intensive readings and research in contemporary film theory and criticism will foster in-depth understanding of chosen topic. Course may be repeated two times for credit when content varies. ***Prerequisites: ENGL F217 or FLM F217; ENGL F211X or ENGL F213X; or permission of instructor.*** Cross-listed with FLM F427. (2+2)

ENGL F435 **Authors** (h)
3 Credits Offered Fall
Intensive, in-depth study of the works of an individual author. Readings from the author's oeuvre along with significant criticism and commentary on the author's works. Course may be repeated once for credit when content varies. ***Prerequisites: ENGL F211X or ENGL F213X or permission of instructor.*** (3+0)

ENGL F440 W,O/2 **Studies in 20th and 21st Century British Literature** (h)
3 Credits Offered Every Third Spring.
Variable subject matter in significant topics in modern and contemporary British literature. Focus may be prose - fiction and nonfiction, poetry, drama, film, or a combination of the above. Course may be repeated once for credit when content varies. ***Prerequisites: ENGL F211X or ENGL F213X or permission of instructor.*** (3+0)

ENGL F450 W,O/2 **Studies in Nineteenth-Century British Literature** (h)
3 Credits Offered Every Third Fall
Intensive study of variable topics in nineteenth-century British literature. May take up a variety of concerns by focusing on literature associated with one or more specific nineteenth-century literary movements (e.g., Romanticism, Realism); historical developments (e.g., the Victorian Age, British colonialism); groups of related writers (e.g., the Lake Poets); social issues (e.g., industrialization, social reform, religion, gender); or an aspect of 19th-century literary theory. Intensive readings and research in contemporary literary theory and criticism will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies. ***Prerequisites: COMM F131X or COMM F141X; ENGL F211X or ENGL F213X or permission of instructor.*** (3+0)

ENGL F455 W,O/2 **Studies in 20th Century and 21st Century American Literature** (h)
3 Credits Offered Every Third Spring
Intensive study of variable topics in American literature. May focus on themes such as Modernism or Postmodernism, Urban Experience, Alienation, Multiculturalism, Race or War; a specific period such as literature of the 1960s; particular genres such as the novel or poetry, an important author; or an aspect of contemporary literary theory. Intensive readings and research in contemporary literary theory and criticism will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies. ***Prerequisites: COMM F131X or COMM F141X; ENGL F211X or ENGL F213X or permission of instructor.*** (3+0)

ENGL F460 W,O/2 **Studies in Comparative/World Literature** (h)
3 Credits Offered Every Third Fall
Intensive study of variable topics in Comparative/ World Literature studies. May focus on themes, such as gender and race in world literature; a specific period, such as World Literature after 1945; a particular region, such as Africa; an important author; or an aspect of contemporary literary theory and criticism. Intensive readings and research in contemporary literary theory and criticism will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies. ***Prerequisites: COMM F131X or COMM F141X; ENGL F211x or F213X, or permission of instructor.*** (3+0)

ENGL F462 **Applied English Linguistics** (h)
3 Credits Offered Spring Even-numbered Years
Topic(s) for each offering of the course are announced. Examples include teaching English as a second language, dialects and education, dictionaries, stylistics, and composition. ***Prerequisites: ENGL F211X or ENGL F213X or permission of instructor.*** (3+0)

ENGL F465 **Genre** (h)
3 Credits Offered Spring
Intensive study of genre focusing on variable subjects such as epic, romance, science fiction, horror narratives, detective narratives, utopian fiction, and roman noir. Intensive readings and research in both primary texts and genre theory will foster in-depth understanding of chosen topic. Course may be repeated once for credit when content varies. ***Prerequisites: ENGL F211X or ENGL F213X or permission of instructor.*** (3+0)

ENGL F471 W **Undergraduate Writers' Workshop** (h)
3 Credits
Discussion of craft and techniques and student work. For advanced students who prepare a manuscript as a final project. May be repeated one time for credit. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; ENGL F371; or permission of instructor.*** (3+0)

ENGL F472 **History of the English Language** (h)
3 Credits Offered Spring Odd-numbered Years
Origin and development of the English language from prehistoric times to the present. ***Prerequisites: ENGL F211X or ENGL F213X or permission of instructor. Recommended: ENGL F318 or a linguistics course is desirable, but not required.*** (3+0)

ENGL F482 **Undergraduate Seminar** (h)
3 Credits Offered Spring Odd-numbered Years
Intensive study of selected topics in the discipline. ***Prerequisites: ENGL F211X or ENGL F213X or permission of instructor.*** (3+0)

ENGL F485 **Teaching Composition in the Schools**
3 Credits Offered Spring Even-numbered Years
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: ENGL F211X or ENGL F213X or permission of instructor.*** (3+0)

ENGL F488 W **Dramatic Writing** (h)
3 Credits Offered Fall Odd-numbered Years
Introduction to the craft of dramatic writing for theater and film, with an emphasis on dramatic storytelling. Course will focus on giving students a practical understanding of the uses of story structure, setting, character, plot and dialog, and how these elements work together to create compelling drama. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** Cross-listed with FLM F488; THR F488. (3+0)

ENGL F601 **Theory, Criticism and Methods**
3 Credits Offered Spring
A study of the theoretical debates that inform contemporary criticism, and of the methods for conducting and evaluating research. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F603 **Studies in British Literature: Old and Middle English**
3 Credits Offered Fall Odd-numbered Years
Variable subject matter in significant topics in Anglo-Saxon and Middle English literature. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F604 **Studies in British Literature: Renaissance and 17th Century**
3 Credits Offered Fall Even-numbered Years
Variable subject matter in significant topics in 16th and 17th-century British literature. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

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ENGL F606 **Studies in British Literature: Restoration and 18th Century**
3 Credits Offered Fall Odd-numbered Years
Variable subject matter in significant topics in British literature of the Restoration period and the 18th century. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F607 **Studies in British Literature: 19th Century**
3 Credits Offered Fall Even-numbered Years
Variable subject matter in significant topics in British literature of the Romantic and Victorian periods. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F608 **Studies in British Literature after 1900**
3 Credits Offered Spring Odd-numbered Years
Variable subject matter in significant topics in modern British literature. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F609 **Early and Romantic American Literature**
3 Credits Offered Fall Odd-numbered Years
Variable subject matter in significant topics of the colonial, national, and romantic periods of American literature. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F611 **American Realism and Modernism**
3 Credits Offered Spring Even-numbered Years
Variable subject matter in significant topics in American literature of the late 19th and early 20th centuries. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F612 **Twentieth Century American Literature**
3 Credits Offered Spring Even-numbered Years
Variable subject matter in American Literature of the 20th century. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F614 **Studies in Comparative Literature**
3 Credits Offered Spring Odd-numbered Years
Advanced study in literature on a transnational basis with varying emphases, including literature of particular locales, modes or themes. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F615 **Contemporary Literature**
3 Credits Offered Spring Even-numbered Years
Variable subject matter in significant topics in post-World War II literature. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F620 **Images of the North**
3 Credits Offered Spring Even-numbered Years
Interdisciplinary approaches to the variety of images created about and by the people and environment of the circumpolar North. The course will analyze conceptualizations of the North as expressed in a number of media such as film, art, literature, travel journals and oral tradition employing methodologies from many disciplines. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with NORS F620. (3+0)

ENGL F661 **Mentored Teaching in English**
1 Credit
Mentored teaching provides consistent contact on course related issues between teaching assistants and mentoring faculty. Graded Pass/Fail. ***Prerequisites: Acceptance into the M.A., M.F.A. in creative writing program, or M.F.A./M.A. combined degree program, and a teaching assistantship award. Note: Teaching assistants are required to be enrolled in a mentored teaching section while teaching. May be repeated up to six times, for one credit per semester.*** (1+0+2)

ENGL F671 **Writers' Workshop**
3 Credits
The writing of verse, fiction, drama or nonfiction prose in accordance with the individual student's needs and the instructor's specialization. Depending on available staff, the workshop may be limited during any semester to work in a particular genre. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F681 **Forms of Poetry**
3 Credits Offered Every Third Semester
Intensive study of the forms and techniques of poetry writing. Includes readings and poetry writing exercises. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F682 **Forms of Fiction**
3 Credits Offered Every Third Semester
Advanced study in narrative technique through analysis of selected fiction and the students' own writing. Variable content in terms of the writers to be studied and the kinds of narrative writing to be assigned. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F684 **Forms of Nonfiction Prose**
3 Credits Offered Every Third Semester
Intensive study of the forms and techniques of nonfiction. Includes readings and writing exercises. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F685 **Teaching College Composition**
3 Credits Offered Fall
An investigation into current practice and theory with demonstrations and reports on pedagogy. Required of all teaching assistants in English. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F686 **Teaching Writing in a Cross-Cultural Context**
3 Credits Offered As Demand Warrants
Contemporary methods of teaching writing in middle school and high school classrooms, with special emphasis on cross-cultural issues and pedagogy and on contemporary rhetorical theory. Includes methodologies and theoretical underpinnings of teaching grammar and fiction writing. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F688 **Writing for Film and Television**
3 Credits Offered Spring Odd-numbered Years
Advanced training in dramatic writing for film and television, with a focus on cinematic story structure, visual imagery, dialogue, pacing, continuity and manuscript format. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

ENGL F692 **Graduate Seminar**
3 Credits Offered As Demand Warrants
Intensive study of selected topics in the discipline. (0+0+3)

ENGLISH AS A SECOND LANGUAGE

ESLG F051 **Speaking English as a Second Language**
1-3 Credits Offered As Demand Warrants
Engaging 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. (1-3+0)

ESLG F061 **Reading English as a Second Language**
1-3 Credits Offered As Demand Warrants
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. (1-3+0)

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ESLG F071 **Writing English as a Second Language**
1-3 Credits Offered As Demand Warrants
Developing 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. (1-3+0)

ENVIRONMENTAL ENGINEERING/ENVIRONMENTAL QUALITY SCIENCE

A per semester fee for computing facilities will be assessed for one or more CEM courses. This fee is in addition to any materials fees.

ENVE F458 **Energy and the Environment**
3 Credits Offered Fall Odd-numbered Years
Overview of basic concepts of energy supply, demand, production of heat and power impacts of energy use on the environment. Extensive discussion of mitigation technologies and strategies for meeting energy needs while preserving environmental quality. ***Prerequisites: CHEM F106X; ES F346 or equivalent; MATH F201X; PHYS F211X.*** Cross-listed with ME F458. Stacked with ENVE F658; ME F658. (3+0)

ENVE F641 **Aquatic Chemistry**
3 Credits Offered As Demand Warrants
Chemistry of aquatic systems, including the development of equilibrium and kinetic models to understanding the speciation, transformation and partitioning of inorganic chemical species in natural and engineered water systems. Emphasis is on the study of acid-base chemistry, complexation, precipitation-dissolution and reduction-oxidation reactions. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with CHEM F605. (3+0)

ENVE F642 **Contaminant Hydrology**
3 Credits Offered Spring Odd-numbered Years
Theoretical and applied aspects of the movement of contaminants through saturated and unsaturated soil. ***Recommended: CE F663 or equivalent; graduate standing; or permission of instructor.*** (3+0)

ENVE F643 **Air Pollution Management**
3 Credits Offered As Demand Warrants
Air pollution topics including the quantity and quality of atmospheric emissions and their effects on the human environment. Identification and location of sources, measurement of quality and conformance with standards. Legal considerations of Clean Air Act and Amendments and local regulations. Evaluation of stationary and moving sources. Meteorology and modeling requirements. Control mechanisms for gases and particulates; and engineering economics. ***Recommended: CHEM 106X or equivalent; MATH F201X; graduate standing; or permission of instructor.*** (3+0)

ENVE F644 **Environmental Management and Law**
3 Credits Offered Spring Odd-numbered Years
Topics of environmental impact statements, environmental law (local, state and federal), public involvement and environmental quality. Impact from projects of mining, highways, airports, pipelines, industrial development, water, wastewater and solid waste, and others — theoretical considerations and case studies. ***Recommended: Graduate standing or permission of instructor.*** (3+0)

ENVE F645 **Unit Processes-Chemical and Physical**
3 Credits Offered Spring Even-numbered Years
Theory and design of chemical and physical unit processes for water and wastewater. Sedimentation, coagulation, flocculation, filtration, ion exchange, adsorption/absorption, gas transfer and other special topics. Emphasis on arctic applications and design. ***Recommended: MATH F201X; CHEM F106X or equivalent; graduate standing; or permission of instructor.*** (3+0)

ENVE F646 **Unit Processes — Biological**
3 Credits Offered Fall Odd-numbered Years
Theoretical and applied aspects of biological wastewater treatment, including waste-activated sludge processes, trickling filters, lagoons, sludge digestion and processing, nutrient removal, biology of polluted waters, state and federal regulations. ***Recommended: Graduate standing or permission of instructor.*** (3+0)

ENVE F647 **Biotechnology**
3 Credits Offered Fall Even-numbered Years
Theoretical and applied aspects of bioengineering. Issues studied include microbiology, metabolism, genetics, genetic engineering, enzymes and catalysis, stoichiometry and kinetics, biological reactor design and bioremediation. ***Recommended: Graduate standing or permission of instructor.*** (3+0)

ENVE F648 **Solid Waste Management**
3 Credits Offered Spring Even-numbered Years
Characterization, collection, disposal and treatment of municipal and industrial residuals. Emphasis on regulations that control waste management, waste generation rates, waste characterization procedures, the flow of materials in society, recycle/reuse and landfill disposal. ***Recommended: Graduate standing or permission of instructor.*** (3+0)

ENVE F649 **Hazardous and Toxic Waste Management**
3 Credits Offered Fall Odd-numbered Years
Course provides in-depth coverage of hazardous and toxic substance management including legal, economic and technical issues. Topics will include characterization of hazardous materials, economics of toxics minimization, hazardous materials use, storage and disposal, technical aspects of landfill siting, and selection and design of treatment technologies. Includes case studies of current waste management issues. ***Recommended: Bachelor's degree in science or engineering.*** Cross-listed with GE F649. (3+0)

ENVE F650 **Advanced Topics**
1 Credit Offered Fall
Presentations by students, faculty and outside experts on current issues in environmental science and engineering. Course may be repeated twice for credit. ***Prerequisites: Graduate Standing.*** (1+0)

ENVE F651 **Environmental Risk Assessment**
3 Credits Offered Spring Odd-numbered Years
The characterization of population exposures and the evidence used to identify environmental substances that may pose a human health risk. The theory and methods for estimating risk: hazard identification, dose-response assessment, exposure assessment and risk characterization. ***Recommended: Undergraduate degree in engineering or natural science.*** (3+0)

ENVE F652 **Introduction to Toxicology for Engineers and Scientists**
3 Credits Offered Fall Even-numbered Years
Introduction to the science of toxicology for graduate students in fields that use information about hazardous chemicals for input into decisions. Topics include an overview of the effects of chemicals on cells, organs and organ systems, and the toxic effects of classes of chemicals such as pesticides, metals and solvents. Use of data from animal testing and common lists, factors and extrapolation are reviewed. ***Recommended: Undergraduate degree in engineering or natural science.*** (3+0)

ENVE F653 **Environmental Measurements Laboratory**
1 Credit Offered Spring
Introduction to analytical methods and measurement techniques used in environmental engineering and environmental quality science. Students will design, conduct and report on a laboratory experiment. Includes sample preparation techniques and analytical methods such as microscopy, atomic adsorption spectroscopy, gas chromatography, liquid chromatography and mass spectrometry. ***Recommended: ENVE F641.*** (0+3)

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ENVE F658 **Energy and the Environment**
3 Credits
Basic concepts of energy supply, demand, production of heat and power impacts of energy use on the environment. Extensive discussion of mitigation technologies and strategies for meeting energy needs while preserving environmental quality. ***Recommended: CHEM F106X; ES F346 or equivalent; MATH F201X; PHYS F211X; graduate standing.*** Cross-listed with ME F658. Stacked with ENVE F458; ME F458. (3+0)

ENVIRONMENTAL STUDIES

ENVI F101 **Introduction to Environmental Science**
3 Credits Offered Spring
Introduces the interconnected topics that make up environmental science. By exploring Earth's systems, environmental questions are investigated such as how to sustainably use natural resources and the influence of population growth on ecosystems. The course takes a holistic approach to reinforce scientific principles. Key topics covered include ecosystem functions, energy, biodiversity, resource management, landscape alteration and climate change. ***Recommended: F100-level biology, chemistry or geology class.*** (3+0)

ENVI F110 **Introduction to Water Quality I: Measurement**
1 Credit Offered Spring
Introduces students to standard water quality methods used and applies them to rural Alaska. Students will become familiar with EPA water quality standards and programs that help preserve water quality in rural communities. Key topics covered include: stream ecology, wastewater management, storm water runoff and data analysis. (0.5+0+1.5)

ENVI F130 **Introduction to the National Environmental Policy Act**
1 Credit Offered Spring
Provides a brief introduction to the National Environmental Policy Act (NEPA). This course will explain what community members need to do to be heard in the NEPA process with special emphasis on public involvement and Environmental Impact Analysis (EIA). The course covers the roles and the content of scoping and Environmental Assessments in relation to key natural resource development projects in rural Alaska. (1+0)

ENVI F160 **Internship in Environmental Studies**
1-2 Credits Offered As Demand Warrants
Under the guidance of a UAF Bristol Bay Campus-approved agency or business (public or private that monitors, tests, analyzes or studies the environment), students gain supervised pre-professional experience in environmental studies. The intern will explore the interdisciplinary aspects of field or laboratory research, build practical expertise and make contacts. Internships make one to ten weeks of full-time commitment to the agency or business and when completed make public presentations on the experience. Graded Pass/Fail. ***Prerequisites: ENVI F101 or permission of instructor.*** (0+0+3.1-15.4)

ENVI F260 **Field Techniques for Environmental Technicians**
2 Credits Offered Summer
Provides hands-on instruction in interdisciplinary field and laboratory techniques used by environmental technicians. Basic methods for sampling and studying terrestrial or aquatic ecosystems will be introduced. Students will participate in data collection and analysis procedures as part of an independent research project. ***Prerequisites: ENVI F101 or NRM F101; ENVI F110; 4 credit lab-based F100-science course; or permission of instructor. Recommended: CIOS F100; CIOS F135.*** (1+3)

ENVI F265 **Introduction to Methods in Environmental Studies Reporting**
2 Credits Offered Fall
Introduces basic data collection methods used in environmental studies then concentrates on research skills necessary to analyze, interpret, and document field and laboratory data and the technical reporting processes. The course is designed to integrate raw environmental data into a technical report covered include ecosystem functions, energy, biodiversity, that can be presented in scientific meeting format. ***Prerequisite: ENVI F101 or NRM F101; ENVI F110; ENVI F260; a lab-based F100 level science course; or permission of instructor. Recommended: ENGL F104 or ENGL F111X; ENVI F160.*** (1.5+0+1.5)

ESKIMO

Note: Two semester-length courses in a single Alaska Native Language or other non-English language taken at the university level may replace 6 credits in the Perspectives on the Human Condition section of the Core. ESK F101-F102, F111-F112, F201-F202 or F211-F212 may be used to meet this requirement but then may not be used to meet humanities degree requirement.

ESK F101 **Elementary Central Yup'ik Eskimo** (h)
5 Credits Offered Fall
Introduction to Central Yup'ik, the language of the Yukon and Kuskokwim deltas and Bristol Bay. Open to both speakers and non-speakers. 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. (5+0)

ESK F102 **Elementary Central Yup'ik Eskimo** (h)
5 Credits Offered Spring
Introduction to Central Yup'ik, the language of the Yukon and Kuskokwim deltas and Bristol Bay. Open to both speakers and non-speakers. 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. (5+0)

ESK F103 **Conversational Central Yup'ik**
1-3 Credits Offered As Demand Warrants
Entry-level course to learn to speak and understand Yup'ik Eskimo. Focus on communication in everyday situations. Kuskokwim and Northwest Campuses only. ***Prerequisites: Permission of instructor.*** (1-3+0)

ESK F104 **Conversational Central Yup'ik**
3 Credits Offered As Demand Warrants
Entry-level course to learn to speak and understand Yup'ik Eskimo. Focus on communication in everyday situations. Kuskokwim and Northwest Campuses only. ***Prerequisites: ESK F103 or permission of instructor.*** (1-3+0)

ESK F106 **Introduction to Inupiaq Eskimo**
1 Credit
Entry-level course to learn to speak and understand basic words and phrases of the Inupiaq Eskimo language of the Northwest Arctic. Instruction is thematic and the focus is on communications for everyday situations. Graded Pass/Fail. (1+0)

ESK F109 **Central Yup'ik Orthography**
3 Credits Offered Fall
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. ***Prerequisites: Demonstrated conversational Yup'ik skills.*** (3+0)

ESK F111 **Elementary Inupiaq Eskimo** (h)
5 Credits Offered Fall
Introduction to Inupiaq, the language of Unalakleet, Seward Peninsula, Kotzebue Sound and the North Slope. Open to both speakers and non-speakers. 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. (5+0)

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ESK F112 **Elementary Inupiaq Eskimo** (h)
5 Credits Offered Spring
Introduction to Inupiaq, the language of Unalakleet, Seward Peninsula, Kotzebue Sound, and North Slope. Open to both speakers and non-speakers. 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. ***Prerequisites: ESK F111.*** (5+0)

ESK F115 **Conversational Inupiaq**
1-3 Credits Offered As Demand Warrants
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. Graded Pass/Fail. (1-3+0)

ESK F116 **Conversational Inupiaq**
1-3 Credits Offered As Demand Warrants
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. ***Prerequisites: ESK F115.*** (1-3+0)

ESK F118 **Inupiaq Orthography**
3 Credits Offered As Demand Warrants
Entry-level course designed for students who are fluent in Inupiaq. Reading silently and aloud, and writing. Emphasis on specific skills and practical application of skills through writing assignments. ***Prerequisites: Demonstrated conversational Inupiaq skills.*** (3+0)

ESK F121 **Elementary Central Yup'ik Apprenticeship I**
4 Credits Offered As Demand Warrants
Entry-level course to learn to speak/understand Yup'ik Eskimo. Local speaker acts as language mentor/primary resource. Focus on everyday situations. Yup'ik faculty member serves as instructor of record. Student and mentor required to participate in 10 hr orientation, maintain weekly contact with instructor of record, and participate in monthly assessment. Kuskokwim campus only. ***Special Conditions: Dependent on ability to identify willing mentor who meets Yup'ik faculty approval.*** (1+10)

ESK F122 **Elementary Central Yup'ik Apprenticeship II**
4 Credits Offered As Demand Warrants
Continuation of ESK F121. Increasing emphasis on listening and speaking skills. Kuskokwim campus only. ***Prerequisites: ESK F121 or formal assessment indicating equivalent speaking and listening skills. Special Conditions: Dependent on ability to identify willing mentor who meets Yup'ik faculty approval.*** (1+10)

ESK F123 **Elementary Central Yup'ik Apprenticeship III**
4 Credits Offered As Demand Warrants
Continuation of ESK F122. Increasing emphasis on listening and speaking skills. Kuskokwim campus only. ***Prerequisites: ESK F122 or formal assessment indicating equivalent speaking and listening skills. Special Conditions: Dependent on ability to identify willing Mentor who meets Yup'ik faculty approval.*** (1+10)

ESK F130 **Beginning Yup'ik Grammar** (h)
3 Credits Offered Spring
Literacy and grammatical analysis of Central Yup'ik language for language learners. Students will learn basic grammatical concepts and literacy skills, with consideration given to dialect differences. ***Prerequisites: ESK F103 or ESK F122 or basic conversational Yup'ik skills.*** (3+0)

ESK F155 **Conversational Siberian Yup'ik**
1-3 Credits Offered As Demand Warrants
Introductory courses for students who wish to acquire the ability to speak in Siberian 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. Northwest Campus only. (1-3+0)

ESK F156 **Conversational Siberian Yup'ik**
1-3 Credits Offered As Demand Warrants
Introductory courses for students who wish to acquire the ability to speak in Siberian 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. Northwest Campus only. (1-3+0)

ESK F158 **Siberian Yupik Orthography**
1-3 Credits Offered As Demand Warrants
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. Northwest Campus only. ***Prerequisites: Ability to speak Siberian Yupik or permission of instructor.*** (1-3+0)

ESK F201 **Intermediate Central Yup'ik** (h)
3 Credits Offered Fall
Continuation of ESK F101 and ESK F102. Increasing emphasis on speaking, reading and writing. ***Prerequisites: ESK F102 or permission of instructor.*** (3+0)

ESK F202 **Intermediate Central Yup'ik** (h)
3 Credits Offered Spring
Continuation of ESK F101 and ESK F102. Increasing emphasis on speaking, reading and writing. ***Prerequisites: ESK F102 or permission of instructor.*** (3+0)

ESK F203 **Conversational Central Yup'ik III** (h)
3 Credits Offered Fall
A continuation of ESK F103 and ESK F104. Kuskokwim campus only. ***Prerequisites: ESK F104 or permission of instructor.*** (3+0)

ESK F204 **Conversational Central Yup'ik IV** (h)
3 Credits Offered Spring
Continuation of ESK F203. Development of proficiency in the Central Yup'ik language, vocabulary for everyday situations, reading and writing. (3+0)

ESK F205 **Regaining Fluency in Yup'ik** (h)
3 Credits Offered Fall
Yup'ik speaking skills and fluency for those with some background in the language. ***Prerequisites: Permission of instructor. Each potential student must be evaluated for language capabilities.*** (3+0)

ESK F206 **Regaining Fluency in Yup'ik II** (h)
3 Credits Offered Spring
Continuation of ESK F205. Speaking skills and fluency for those with some background in the language. ***Prerequisites: ESK F205 or permission of instructor. Each potential student must be evaluated for language capabilities.*** (3+0)

ESK F208 **Yup'ik Composition** (h)
3 Credits Offered Spring
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. ***Prerequisites: ESK F109.*** (3+0)

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ESK F211 **Intermediate Inupiaq Eskimo** (h)
3 Credits Offered Fall
Continuation of ESK F111 and ESK F112, concentrating on development of conversational ability, with presentation of additional grammar and vocabulary. ***Prerequisites: ESK F112.*** (3+0)

ESK F212 **Intermediate Inupiaq Eskimo** (h)
3 Credits Offered Spring
Continuation of ESK F211, concentrating on development of conversational ability, with presentation of additional grammar and vocabulary. ***Prerequisites: ESK F211.*** (3+0)

ESK F218 **Inupiaq Composition**
3 Credits Offered As Demand Warrants
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 ***Prerequisites: ESK F118 or equivalent.*** (3+0)

ESK F221 **Intermediate Central Yup'ik Apprenticeship I**
3 Credits Offered As Demand Warrants
Intermediate-level learning to speak and understand Yup'ik. Local speaker acts as mentor/primary resource. Focus on everyday situations. Yup'ik faculty member serves as instructor of record. Student and mentor required to participate in ten hour orientation, maintain weekly contact with instructor of record, and participate in monthly assessment. Kuskokwim campus only. ***Prerequisites: ESK F123 or formal assessment indicating equivalent speaking and listening skills. Special Conditions: Dependent on ability to identify willing mentor who meets Yup'ik faculty approval.*** (1+10)

ESK F222 **Intermediate Central Yup'ik Apprenticeship II**
3 Credits Offered As Demand Warrants
Continuation of ESK F221. Increasing emphasis on listening and speaking skills. Dependent on ability to identify willing mentor who meets Yup'ik faculty approval. Kuskokwim campus only. ***Prerequisites: ESK F221 or formal assessment indicating equivalent speaking and listening skills.*** (1+10)

ESK F223 **Intermediate Central Yup'ik Apprenticeship III**
3 Credits Offered As Demand Warrants
Continuation of ESK F222. Increasing emphasis on listening and speaking skills. Dependent on ability to identify willing mentor who meets Yup'ik faculty approval. Kuskokwim campus only. ***Prerequisites: ESK F222 or formal assessment indicating equivalent speaking and listening skills.*** (1+10)

ESK F230 **Introduction to Interpreting and Translating I** (h)
3 Credits Offered As Demand Warrants
Introduction to interpreting and translating, designed for both those wishing to enter the field and those who wish to upgrade their skills. Discussion of problems which arise during interpreting and translating along with suggestions on how to handle them. ***Prerequisites: Must be fluent in English and Yup'ik; permission of instructor.*** (3+0)

ESK F231 **Introduction to Interpreting and Translating II** (h)
3 Credits Offered As Demand Warrants
Continuation of ESK F230. ***Prerequisites: ESK F230.*** (3+0)

ESK F240 **Introduction to Reading and Writing Yup'ik**
3 Credits Offered Fall Odd-numbered Years
Emphasis on reading and writing Yup'ik for practical purposes (posters, brochures, pamphlets, newsletters, signs) and continued language learning (short stories, descriptions and narratives). ***Prerequisites: ESK F130; ESK F204 or ESK F222.*** (3+0)

ESK F250 **Yup'ik Literature for Children**
3 Credits Offered As Demand Warrants
Students explore and practice reading children's literature in Yup'ik. Students are exposed to a variety of genres (fiction, nonfiction, traditional stories, poetry, songs, etc.). Reader leveling will be discussed. Students are required to write targeted readers for specific reading levels in Yup'ik. Kuskokwim campus only. ***Prerequisites: ESK F208 or equivalent reading and writing skills.*** (3+0)

ESK F251 **Teaching Beginning Yup'ik Reading and Writing**
3 Credits Offered As Demand Warrants
Teaching strategies in Yup'ik literacy. Focus on reading and writing at the primary-early entry through intermediate levels. Students develop lessons for reading, writing and word study, manage instructional time, and use assessment for placement and instructional purposes. Materials, reading resources, and instructional guides will be reviewed and used for the development of lessons. Kuskokwim campus only. ***Prerequisites: ESK F208 or equivalent reading and writing skills.*** (3+0)

ESK F260 **Siberian Yupik Eskimo** (h)
3 Credits Offered As Demand Warrants
A course in Eskimo language of St. Lawrence Island and the opposing area of Chukotka in Russia. Concentration on literacy and grammar with background given for conversation. Open to speakers of the language and to others if they have taken one or more years of Central Yup'ik or Inupiaq courses. ***Prerequisites: Ability to speak Siberian Yupik or one year study of other Eskimo language.*** (3+0)

ESK F261 **Siberian Yupik Eskimo** (h)
3 Credits Offered As Demand Warrants
A course in Eskimo language of St. Lawrence Island and the opposing area of Chukotka in Russia; concentration on literacy and grammar (with background given for conversation); open to speakers of the language and to others if they have taken one or more years of Central Yup'ik or Inupiaq courses. ***Prerequisites: Ability to speak Siberian Yupik or one year study of other Eskimo language.*** (3+0)

ESK F301 **Advanced Central Yup'ik Eskimo** (h)
3 Credits Offered Fall
Continuation of ESK F201 and F202. Completes the basic study of the Central Yup'ik grammar. ***Prerequisites: ESK F101; ESK F102; ESK F201; ESK F202; or permission of instructor.*** (3+0)

ESK F330 W **Yup'ik Literature/Yupiit Quliraitnek Igaryaraq** (h)
3 Credits Offered Fall Even-numbered Years
Central Yup'ik literature with exposure to a variety of literary styles, including qulirat, qaneryaraqegtaaraat, ak'allaat qulirat, qanruyutet/ alerquutet. Broad range of regional, stylistic and orthographic traditions through a variety of short papers and a final paper/project. Specific content to be announced at time of registration. Taught entirely in Yup'ik. Kuskokwim campus only. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; ESK F208; ESK F240.*** (3+0)

ESK F375 O **Yup'ik Philosophy/Umyuarteqsaraq** (h)
3 Credits Offered Fall Even-numbered Years
Exploration of Yup'ik philosophy and spirituality, including exploration of the relationship between modern and traditional belief systems and the influence of western religion and philosophy. Taught entirely in Yup'ik. Kuskokwim campus only. ***Prerequisites: COMM F131X or COMM F141X; ESK F240.*** (3+0)

ESK F415 **Additional Topics in Advanced Yup'ik Eskimo** (h)
3 Credits Offered Spring
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 F101; ESK F102; ESK F201; ESK F202; or permission of instructor.*** (3+0)

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ESK F417 **Advanced Inupiaq Eskimo** (h)
3 Credits Offered Spring
Advanced study in Inupiaq Eskimo. Continuation of ESK F212. ***Prerequisites: ESK F111; ESK F112; ESK F211; ESK F212; or permission of instructor.*** (3+0)

ESK F488 W **Documenting Yup'ik Traditions/Caliarkaq** (h)
3 Credits Offered Fall Even-numbered Years
Major research project relating to Yup'ik language and culture (e.g. traditional narratives, personal/local histories, local customs/beliefs). Project formats include (but are not limited to) research papers, video/audiotapes, curricula and public presentations. Note: As a writing intensive course, all formats will include a significant written component. Taught entirely in Yu'pik. Kuskokwim campus only. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; ESK F330; senior standing; or permission of instructor.*** (3+0)

ETHNOBOTANY

EBOT F100 **Introduction to Ethnobotany**
3 Credits
Basic concepts of botany and ethnobotany, with emphasis on the native flora of Alaska and how people use these plants. Basic plant biology and taxonomy; scientific methods of plant collection, including identification and curation; use of native Alaska plants for food and medicines; ethnobotanical methods of collecting plant-use information from indigenous cultures and ways that this information contributes to other fields of study, such as resource management, community development, and human health. (2+3)

EBOT F200 **Seminar in Ethnobotany**
1 Credit Offered Spring Odd-numbered Years.
Surveys basic concepts of ethnobotany and ethnoecology, with emphasis on how people use plants, the role of plants in traditional food systems, and the dynamics of human-plant -ecosystem interactions in a context of rapid social, ecological and climatic change. Lectures and discussion focus specifically on plant use in Alaska and other high latitude geographic and ecological settings, but ethnobotanical research in mid latitude and tropical settings will be referenced where appropriate. Students will gain a basic understanding of plant biology and taxonomy; plants and ecosystem services; the use of native Alaska plants for food and medicines; the economics of innovative plant-based businesses; and the cultural and economic significance of plant use to other cultures worldwide. ***Prerequisites: EBOT F100; or permission of instructor.*** (1+0)

EBOT F210 **Ethical Wildcrafting**
1 Credit Offered Fall
Provides an understanding of the industry of wildcrafting: the gathering, harvesting, processing and in some cases, marketing of nontimber forest products. Specific examples from Alaska will be used to illustrate all aspects of this course, from identification of native flora, to a conceptualization of the unique market niche that Alaskan natural products fill, to native plant propagation and effects of invasive plants. ***Prerequisites: EBOT F100; or permission of instructor*** (1+0)

EBOT F220 **Ethnobotanical Techniques**
2 Credits Offered Spring
Provides required skills for conducting field investigations into the human use of plants. Focuses on interviewing elders about native plant use and methods for conducting structured and non-structured interviews, plant collection, participant observation and data analysis. Ethical issues in ethnobotany, e.g., intellectual property rights, benefit-sharing and conservation of native plants. ***Prerequisites: EBOT F100; EBOT F200.*** (1.5+0+1.5)

EBOT F230 **Ethnobotanical Chemistry**
3 Credits Offered Fall
Basic understanding of chemical structure and function of medicinally active plant compounds. How and why plants produce primary and secondary compounds, how humans use these compounds and methods used to isolate and deliver plant-derived compounds. How drugs are derived from plants and the ethics of bioprospecting. Medicinal flora of Alaska from a chemical perspective. ***Prerequisites: EBOT F100; CHEM F103X or CHEM F105X.*** (3+0)

FILM STUDIES

FLM F105 **History of the Cinema** (h)
3 Credits
History and development of the medium of film in the U.S. and abroad during the last 100 years. Content will vary each semester. Note: Available via Independent Learning only. Cross-listed with JRN F105. (3+0)

FLM F172 **Previsualization and Preproduction for Digital Cinema** (h)
3 Credits Offered Spring Even-numbered Years
Previsualization is a collaborative process that generates preliminary versions of shots or sequences, predominantly using 3D animation tools and a virtual environment. It enables filmmakers to visually explore creative ideas, plan technical solutions and communicate a shared vision for efficient production. Laying a foundation for cinema production, this course will explore screenwriting, storyboarding, previsualization animation, animatics and film pre-production approaches. This course will focus on developing original stories for animation or dramatic film productions and preparing those concepts for cinematic production. Cross-listed with THR F172 and ART F172. (3+0)

FLM F217 **Introduction to the Study of Film** (h)
3 Credits Offered Spring
An appreciation course designed to introduce the student to the various forms of cinematic art with special emphasis on humanistic and artistic aspects. ***Prerequisites: ENGL F111X.*** Cross-listed with ENGL F217; JRN F217. (2+2)

FLM F245 **Stage and Film Production Management** (h)
3 Credits
Define and develop organizational skills to be a successful stage or film production manager. Creation of a prompt script including all forms and schedules necessary, working with actors, directors and designers. Creation of film production schedules, call sheets, shooting scripts, location management, and union requirements. Cross-listed with THR F245. (3+0)

FLM F251 **Television Production**
4 Credits Offered Fall
Television studio production, floor directing, audio, camera, staging, lighting and switching. Special fees apply. Cross-listed with JRN F251. (2+5)

FLM F271 **Let's Make a Movie!**
3 Credits Offered Fall
Produce a short dramatic video including concept and script development, basic camera and shooting techniques, working with actors/directing fundamentals, location scouting, production schedule development, basic non-linear editing techniques, and DVD authoring. Students do not need previous experience making movies to take this class. Special fees apply. ***Recommended: THR F121; THR F241.*** Cross-listed with THR F271. (3+0)

FLM F280 **Video Storytelling** (h)
3 Credits Offered Fall
Basics of digital video production technology, composition, audio, lighting and editing as it relates to primarily nonfiction filmmaking. Students will conclude the course by producing their own short videos. Special fees apply. Cross-listed with JRN F280. (3+0)

FLM F290 **Digital Video Editing**
3 Credits Offered As Demand Warrants
Introduction to the technical and aesthetic aspects of non-linear digital video editing. Students will go from little or no experience in non-linear editing to being comfortable with some of the advanced editing techniques. Address motion picture editing theories that are not bound to time or specific editing technology. Special fees apply. Cross-listed with JRN F290. (3+0)

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FLM F308 **Film Criticism** (h)
3 Credits
Theoretical approaches to viewing, analyzing and evaluating film and television program content. Note: Available via Independent Learning only. Cross-listed with JRN F308. (3+0)

FLM F310 **Acting for the Camera** (h)
3 Credits Offered Fall Even-numbered Years
Students will apply skills introduced in Fundamentals of Acting to acting for the camera. By acting in numerous on-camera exercises, television, and film scenes, the class will expand each performer's expressiveness for the camera. May be repeated twice for credit. Special fees apply. ***Prerequisites: THR F121. Recommended prerequisite: THR F221.*** Cross-listed with THR F310. (3+0)

FLM F331 **Directing Film/Video** (h)
3 Credits Offered Spring
Introduction to the history, theory and basic concepts of film direction. Includes interpretative script analysis, creative visualization, conceptualization, use of space, working with actors and designers, and direction of short scenes and videos. Special fees apply. ***Prerequisites: THR F121; FLM/THR F215; or permission of instructor.*** Cross-listed with THR F331. (1+4)

FLM F332 **Directing Theatre** (h)
3 Credits Offered Spring
History, theory and basic concepts of stage direction. Interpretive script analysis, creative visualization, conceptualization, use of space, working with actors and designers and direction of short scenes. ***Recommended: THR F121.*** (3+0)

FLM F334 W **Movies and Films: Watching and Analyzing** (h)
3 Credits Offered Spring
Thematic topics in the study of the art of classic cinema (films) and popular mass media (movies). Comparative analysis of classics and recent motion pictures is used to present elements of film language, analysis and criticism in this writing intensive course. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** Cross-listed with THR F334. (3+0)

FLM F347 O **Lighting Design** (h)
3 Credits
Principles and techniques of theatrical lighting design. The student will conduct practical experiments and design projects applying the experience gained from the experiments. Students will spend approximately $40 for materials. Also available via Independent Learning. ***Prerequisites: COMM F131X or COMM F141X. Recommended: THR F241; THR F247.*** Cross-listed with ART F347; JRN F347; THR F347. (3+0)

FLM F348 **Sound Design for the Entertainment Industry** (h)
3 Credits Offered Spring Odd-numbered Years
Exploration and application of the elements of design as they relate to sound for theatre, dance, film, video, and other art forms, and life in American and other cultures. Production work is required. Special fees apply. ***Recommended: THR F241; THR F247.*** Cross-listed with THR F348. (2+2)

FLM F371 O **Digital Photography and Pixel Painting**
3 Credits
An introduction to the world of digital imaging with applications in fine and commercial art. It is expected that students will become competent at creating real-looking images of impossible subjects as well as detecting their creation by others. The varied ethical issues engendered by this expertise will be addressed in depth. Students will be required to gain proficiency in visual design for electronic and print publication. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; Macintosh OS or Windows OS experience with graphic applications; one college level studio art course.*** Cross-listed with ART F371; JRN F371. (1+4)

FLM F381 W **Alaska Natives in Film** (h)
3 Credits Offered Spring Odd-numbered Years
Analysis of the portrayal of Alaska's Inupiaq and Yup'ik peoples (with some on Canada's Inuit) through select films and readings. Learning to critically analyze films and understanding how various film techniques are accomplished while focusing on feature films' treatment and use of Northern peoples in film, as well as looking at the social impact of such films. Also available via Independent Learning. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor. Recommended: ART/MUS/THR F200X.*** Cross-listed with ANS F381. (1.5+2-4)

FLM F418 **Internship in Film Production** (h)
1-6 Credits Offered As Demand Warrants
This course offers students unique opportunities to work in the professional film industry. Professional internships require a faculty advisor as well as professional evaluation for the supervised work. Course can be repeated twice for a maximum of 12 credits. Variable Credit, 40 hours of internship is equal to 1 credit. Recommended: FLM F271, FLM F245. ***Prerequisites: 18 credits in upper division film classes or permission of instructor.*** (0+0+1-6)

FLM F427 **Topics in Film Studies** (h)
3 Credits Offered Spring
Intensive study of variable topics in film studies. May focus on themes such as race or war in film; a specific period such as films of the 1940's: particular genres such as horror, film noir, or the musical, an important director, or an aspect of contemporary film theory. Intensive readings and research in contemporary film theory and criticism will foster in-depth understanding of chosen topic. Course may be repeated two times for credit when content varies. ***Prerequisites: ENGL F217 or FLM F217; ENGL F211X or ENGL F213X; or permission of instructor.*** Cross-listed with ENGL F427. (2+2)

FLM F431 **Advanced Film Production**
3 Credits Offered Spring even numbered years
In depth investigation into the history, theory and concepts of film and video direction. Script preparation, storyboarding and animatics, blocking actors and staging the camera, sound design, special effects, and editing techniques will be explored. Each student will produce their own capstone film project. ***Prerequisites: FLM F273, FLM F331, FLM/JRN F290. Recommended: FLM F271, FLM F334.*** Cross-listed with THR F431. (3+0)

FLM F460 **Cross-Cultural Filmmaking** (h)
3 Credits Offered Fall Odd-numbered Years
The use of film as a documentary tool for describing and understanding scientific and cultural phenomenon has led to the education of generations. Understanding the implications of our film work with a theoretical base for cultural understanding, scientific need and educational potentials will strengthen the film's integrity and production methods in creating video documents useful as a scientific/cultural record. Pre- production will include research of archival visual media, oral histories and print materials; analysis of educational and scientific funding and distribution options and preliminary interviews, location scouting and film treatment. Production will include time on location with small film crews, media logging and record keeping. Post- production will include basic editing of sequences for distribution. ***Prerequisites: Junior, senior or graduate standing or permission of instructor.*** Cross-listed with ANTH F460 and ART F460. (3+0)

FLM F470 **Advanced Film and Video Directing** (h)
3 Credits Offered Fall Even-numbered Years
In depth investigation into the history, theory and basic concepts of film and video direction. Script preparation, story board, blocking actors and staging the camera, sound and editing. Projects include directing and shooting short videos. Special fees apply. ***Recommended: FLM/THR F331.*** Cross-listed with THR F470. (1+6)

FLM F472 O **Visualization and Animation** (h)
3 Credits Offered Fall
An introduction to visualization and animation with applications in fine and commercial art and science. Students will produce a series of three dimensional animation projects which will introduce them to the tools and concepts used by animation and visualization professionals. Note: May be repeated for credit. Special fees apply. ***Prerequisites: ART F371 or equivalent; COMM F131X or COMM F141X.*** Cross-listed with ART F472; JRN F472. (1+4)

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FLM F475 **Digital Video Compositing** (h)
3 Credits Offered As Demand Warrants
Digital compositing techniques for creating moving imagery. The course covers video manipulation, layering images, synthesizing realistic video imagery, integration of live action and computer generated animation. Course can be repeated for a total of nine credits with permission of instructor. ***Prerequisites: ART F472 or JRN F472 or FLM F472 or equivalent.*** Cross-listed with ART F475. (1+4)

FLM F480 **Documentary Filmmaking** (h)
3 Credits Offered Spring
Basics of hands-on documentary filmmaking techniques, including preproduction, production and postproduction. Different documentary filmmaking directing styles and the process of distributing a documentary. Each student will produce a short documentary as the capstone of the course. Special fees apply. ***Basic experience in shooting and editing video or permission of instructor.*** Cross-listed with: JRN F480. (3+0)

FLM F488 W **Dramatic Writing** (h)
3 Credits Offered Even Alternate Fall
Introduction to the craft of dramatic writing for theater and film, with an emphasis on dramatic storytelling. Course will focus on giving students a practical understanding of the uses of story structure, setting, character, plot and dialog, and how these elements work together to create compelling drama. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** Cross-listed with ENGL F488; THR F488. (3+0)

FIRE SCIENCE

FIRE F101 **Principles of Emergency Services**
3 Credits Offered Fall
Overview of fire protection, career opportunities in fire protection and related fields, philosophy and history of fire protection/service. Fire loss analysis, organization and function of public and private protection services. Fire departments as part of local government, laws and regulations affecting fire services, fire service nomenclature, specific fire protection functions. Basic fire chemistry and physics, introduction to fire protection systems and introduction to fire strategy and tactics. (3+0)

FIRE F105 **Fire Prevention**
3 Credits Offered Fall
The history and philosophy of fire prevention, organization and operation of a fire prevention bureau. Use of fire codes, identification and correction of fire hazards, and the relationships of fire prevention with built-in fire protection systems, fire investigation, and fire and life-safety education. ***Prerequisites: FIRE F101 or permission of instructor.*** (3+0)

FIRE F107 **Strategy and Tactics**
3 Credits Offered Spring
The principles of fire control through utilization of personnel, equipment and extinguishing agents on the fire ground. ***Prerequisites: FIRE F101 or permission of instructor.*** (3+0)

FIRE F110 **Introduction to Hazardous Waste Operations and Emergency Response**
3 Credits Offered As Demand Warrants
Review of federal and state hazardous materials laws and regulations. Career opportunities related to the field of hazardous materials including transportation, emergency response, site clean up and Incident Command System (ICS). (3+0)

FIRE F115 **Fire Apparatus and Equipment**
3 Credits Offered Spring Even-numbered Years
Fire apparatus design, specifications and performance capabilities, effective use of apparatus in fire emergencies. ***Prerequisites: FIRE F101 or permission of instructor.*** (3+0)

FIRE F117 **Rescue Practices**
3 Credits Offered Spring
Rescue situations and techniques including vehicle extrication, rescue carries, ventilation principles, structural rescue, use of portable hand and power tools, wildland/canine search and rescue, ice and water rescue and emergency life saving principles. Also Offered Pass/Fail as FIRE F117P. Special fees apply. ***Prerequisites: EMS F170, or permission of instructor. All students are required to wear a complete set of fire department-approved protective clothing (turnout gear). Limited quantities are available for loan through the emergency services program coordinator. An eight-hour personal protective equipment and self-contained breathing apparatus safety orientation must be completed in order to participate in live fire exercises.*** (3+0)

FIRE F121 **Fire Behavior and Combustion**
3 Credits Offered Fall
Theories and fundamentals of how and why fires start, spread, and how they are controlled. (3+0)

FIRE F123 **Fire Investigations I**
3 Credits Offered Spring Odd-numbered Years
Fundamentals and technical knowledge needed for proper fire scene interpretations, including recognizing and conducting origin and cause, preservation of evidence and documentation, scene security, motives of the firesetter and types of fire causes. ***Prerequisites: FIRE F101 or permission of instructor.*** (3+0)

FIRE F127 **Vessel Safety: Emergency Equipment, Procedures and Drills**
1 Credit Offered Fall
Introduction to safe boating practices and skills including boat handling, rules of navigation, proper safety equipment, weather, boat trailering, lines and knots, first aid and emergency procedures. Graded Pass/Fail. (1+0)

FIRE F131 **Firefighter I, Series I**
3 Credits Offered Spring, As Demand Warrants
The initial phase in a four-phase process for achieving State of Alaska Fire Fighter I certification. Fundamental knowledge of fire behavior, fire organizations, types of fire equipment emergency response services possess and methods of their use. Successful completion of all four phases will qualify the student for Alaska State Fire Fighter I certification. Special fees apply. ***Prerequisites: All students are required to wear a complete set of fire department approved protective clothing (turnout gear). Limited quantities are available for loan through the Emergency Services Program coordinator.*** (3+0)

FIRE F133 **Firefighter I, Series II**
3 Credits Offered Fall, As Demand Warrants
The second phase in a four-phase process for achieving State of Alaska Fire Fighter I certification. Fundamental knowledge of fire behavior, fire organizations, types of fire equipment emergency response services possess and methods of their use. Successful completion of all four phases will qualify the student for Alaska State Fire Fighter I certification. Special fees apply. ***Prerequisites: All students are required to wear a complete set of fire department approved protective clothing (turnout gear). Limited quantities are available for loan through the emergency services program coordinator. An 8 hour Personal Protective equipment (PPE) and Self-Contained Breathing Apparatus (SCBA) safety orientation offered each semester must be completed in order to participate in live fire exercises.*** (2+2)

FIRE F135 **Firefighter I, Series III**
3 Credits Offered Fall, As Demand Warrants
The third phase in a four-phase process for achieving State of Alaska Fire Fighter I certification. Fundamental knowledge of fire behavior, fire organizations, types of fire equipment emergency response services possess and methods of their use. Successful completion of all four phases will qualify the student for Alaska State Fire Fighter I certification. Special fees apply. ***Prerequisites: All students are required to wear a complete set of fire department approved protective clothing (turnout gear). Limited quantities are available for loan through the Emergency Services program coordinator. An 8 hour Personal Protective equipment (PPE) and Self-Contained Breathing Apparatus***

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(SCBA) safety orientation is offered each semester and must be completed in order to participate in live fire exercises. (2+2)

FIRE F137 Firefighter I, Series IV
3 Credits Offered Spring, As Demand Warrants
The final phase in a four-phase process for achieving State of Alaska Fire Fighter I certification. Fundamental knowledge of fire behavior, fire organizations, types of fire equipment emergency response services possess and methods of their use. Successful completion of all four phases will qualify the student for Alaska State Fire Fighter I certification. Special fees apply. (3+0)

FIRE F143 Firefighter Internship, Series 1
1 Credit Offered Fall
Practical experience in fire operations and training by arrangement through local fire departments. Graded Pass/Fail. (0+2)

FIRE F145 Firefighter Internship, Series 2
1 Credit Offered Spring, As Demand Warrants
Practical experience in fire operations and training by arrangement through local fire departments. Graded Pass/Fail. ***Prerequisites: FIRE F143.*** (0+2)

FIRE F147 Firefighter Internship, Series 3
1 Credit Offered Spring, As Demand Warrants
Practical experience in fire operations and training by arrangement through local fire departments. ***Prerequisites: FIRE F145.*** (0+2)

FIRE F151 Wildland Fire Control I
3 Credits Offered Spring
Designed to provide national certification for entry-level and experienced fire fighters with fundamental knowledge of wildland fire organization, fire behavior, air operations, suppression methods, safety and the incident command system. Successful course completion combined with national age and physical fitness requirements will qualify the student for an interagency fire qualification card (red card) with a rating of Firefighter (FFT2). (3+0)

FIRE F153 Advanced Wildland Firefighter
3 Credits Offered Fall
Designed to provide national certification for advanced wildland firefighters with knowledge of water use, preliminary fire investigation and the duties and responsibilities of the squad boss. ***Prerequisites: FIRE F151 or instructor permission.*** (2.5+1)

FIRE F155 Wildland Fire Behavior
3 Credits Offered Spring Odd-numbered Years
Fire behavior knowledge necessary 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. ***Prerequisites: FIRE F151 or permission of instructor.*** (3+0)

FIRE F157 Wildland Air Operations and Safety
3 Credits Offered Fall Odd-numbered Years
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. ***Prerequisites: FIRE F151 or permission of instructor.*** (3+0)

FIRE F159 Wildland Fire Operations Function
3 Credits Offered Fall Odd-numbered Years
Overview of the operations function including organization; implementation of the incident action plan; tactical use of crews, engines and bulldozers; appointment of supervisors in accordance with span of control; use of fixed wing and rotor wing aircraft and fire operations in the urban interface. Functional position of single resource boss/crew covered. ***Prerequisites: FIRE F151; FIRE F153; FIRE F155; FIRE F157; FIRE F254; or permission of instructor.*** (3+0)

FIRE F161 Wildland Fire Logistics Function
3 Credits Offered Fall Even-numbered Years
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. ***Prerequisites: FIRE F151 or permission of instructor.*** (3+0)

FIRE F165 Wildland Fire Planning Function
3 Credits Offered Fall Odd-numbered Years
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. ***Prerequisites: FIRE F151 or permission of instructor.*** (3+0)

FIRE F202 Fire Protection Hydraulics and Water Supply
3 Credits Offered Spring
Provides a foundation of theoretical knowledge in order to understand the principles of the use of water in fire protection and their application to analyze and solve water supply problems. ***Prerequisites: DEVM F060 or placement into DEVM F105; FIRE F101;or permission of instructor.*** (3+0)

FIRE F203 Hazardous Materials Chemistry I
3 Credits Offered Fall
Basic fire chemistry relating to most categories of hazardous materials including problems of recognition, reactivity and health risks encountered by fire fighters. ***Prerequisites: Satisfactory demonstration of basic chemistry knowledge (pretest) or permission of instructor.*** (3+0)

FIRE F205 Hazardous Materials Chemistry II
3 Credits Offered Spring Odd-numbered Years
Chemistry review of common hazardous materials. Control, confinement and containment operations with an emphasis on decontamination procedures. Basic incident command system instruction. Meets requirements of the operations level, first responder to hazardous materials incidents. ***Prerequisites: FIRE F203 or permission of instructor.*** (3+0)

FIRE F206 Building Construction for Fire Protection
3 Credits Offered Spring
The components of building construction that relate to fire and life safety. Focuses on fire fighter safety. Includes elements of construction and design of structures shown to be key factors when inspecting buildings, preplanning fire operations and operating emergencies. ***Prerequisites: FIRE F101 or employment or experience in related field, such as fire protection, insurance, construction architecture, or engineering.*** (3+0)

FIRE F207 Hazardous Materials Technician
3 Credits Offered As Demand Warrants
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 #165.15). Special fees apply. ***Prerequisites: FIRE 205 or permission of instructor.*** (3+0)

FIRE F209 Hazardous Materials Command/Safety Officer
3 Credits Offered As Demand Warrants
Preparation for Incident Commander and the Safety Officer positions on complex hazardous materials incidents or large site cleanup operations. ***Prerequisites: FIRE F207 or permission of instructor.*** (3+0)

FIRE F210 Fire Administration I
3 Credits Offered Fall
Organization and management of a fire department and the relationship of government agencies to the fire service. Emphasis on fire service leadership from the perspective of the company officer. ***Prerequisites: FIRE F101 or permission of instructor.*** (3+1)

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FIRE F212 Building and Fire Codes
3 Credits Offered Spring Even-numbered Years
Introduction to life safety aspects of the 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 the International Conference of Building Officials. ***Prerequisites: FIRE F101; FIRE F206; or permission of instructor.*** (3+0)

FIRE F214 Fire Protection Systems
3 Credits Offered Fall
Features of design and operation of fire detection and alarm systems, heat and smoke control systems, special protection and sprinkler systems, water supply for fire protection and portable fire extinguishers. ***Prerequisites: FIRE F101 or permission of instructor.*** (3+0)

FIRE F215 Advanced Hazardous Materials Technician
3 Credits Offered As Demand Warrants
Provides increased hands-on skills for personnel with a hazardous materials technician rating. Emphasis will be placed on task proficiency in spill containment, plugging, patching, diking and valve shut-offs on large commercial transporters. Stabilization of large and small chlorine leaks and decontamination will also be covered. Special fees apply. ***Prerequisites: FIRE F207 or permission of instructor.*** (2+2)

FIRE F216 Methods of Instruction for Emergency Services Training
3 Credits Offered Spring Odd-numbered Years
Skills necessary to instruct emergency service courses including adult education techniques, classroom setup, use of audiovisual equipment, presentation, and evaluation methods of students and instruction. (3+0)

FIRE F217 Hazardous Materials Technician Refresher
1 Credit Offered As Demand Warrants
Information and skills required for protection and safety of personnel engaged in response and field cleanup of hazardous materials and substances at the hazardous materials technician level. Special fees apply. ***Prerequisites: FIRE F206 or equivalent with certification that may not be expired for more than one calendar year.*** (1+0)

FIRE F218 Advanced Rescue Practices
3 Credits Offered Fall
Provides instruction in four of the most common rescue situations that fire departments encounter in an Interior Alaska rescue: vehicular extrication, rope rescue, confined space rescue and ice/water rescue. Class stresses basic knowledge and hands-on experience. All students are required to wear a complete set of fire department-approved protective clothing (turnout gear). Limited quantities are available for loan through the Emergency Services Program Coordinator. Special fees apply. ***Prerequisites: EMS F170; FIRE F117; or permission of instructor.*** (3+0)

FIRE F219 Rapid Intervention Company Operations
3 Credits Offered As Demand Warrants
Provides firefighters with the knowledge and skills necessary to work safely and respond appropriately to life-threatening situations. Includes rapid intervention team building skills, self rescue techniques and the knowledge to handle a mayday or high risk/threat situation. Completion of course will qualify students for the state of Alaska certification testing process. All students are required to wear full firefighter personal protective equipment. Limited quantities of PPE are available for loan through the program coordinator. Special fees apply. ***Prerequisites: FIRE F117, FIRE F131, FIRE F133, FIRE F135 and FIRE F137; or department head approval.*** (2.5+1)

FIRE F231 Hazardous Materials Tactical Operations
3 Credits Offered As Demand Warrants
Tactical operations involving hazardous materials at fixed facilities as well as transportation incidents involving flammable and combustible liquids, corrosives, poisons, cryogenics, oxidizers, LPG, etiological materials, etc. ***Prerequisites: FIRE F207 or permission of instructor.*** (3+0)

FIRE F232 Fire Fighter II
3 Credits Offered Summer, As Demand Warrants
Advanced technical study of fire alarms, communications, fire behavior, self-contained breathing apparatus, rescue, safety, ladders, fire hose, nozzles and appliances, fire streams, water supplies, sprinklers, overhaul and inspections. All students are required to wear a complete set of fire department approved protective clothing (turnout gear). Limited quantities are available for loan through the emergency services program coordinator. Special fees apply. ***Prerequisites: FIRE F131; FIRE F133; FIRE F135; FIRE F137; or permission of instructor. Note: An eight-hour personal protective equipment and self-contained breathing apparatus safety orientation must be completed in order to participate in live fire exercises.*** (2+2)

FIRE F244 Firefighter Internship, Series 4
1 Credit Offered Fall
Practical experience in fire operations and training by arrangement through local fire departments. ***Prerequisites: FIRE F145 or FIRE F147.*** (0+2)

FIRE F246 Firefighter Internship, Series 5
1 Credit Offered Spring
Practical experience in fire operations and training by arrangement through local fire departments. ***Prerequisites: FIRE F244.*** (0+2)

FIRE F248 Firefighter Internship, Series 6
1 Credit Offered Summer, As Demand Warrants
Practical experience in fire operations and training by arrangement through local fire departments. ***Prerequisites: FIRE F246.*** (0+2)

FIRE F249 Computer Aided Management of Emergency Operations
3 Credits Offered As Demand Warrants
Assistance to emergency planners and first responders to plan for and safely handle chemical accidents through use of a computer. CAMEO contains chemical nomenclature and response information for 3,311 commonly transported chemicals. (2.5+1)

FIRE F252 Wildland Fire Prevention
3 Credits Offered Spring Even-numbered Years
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. ***Prerequisites: FIRE F151; FIRE F153; or permission of instructor.*** (3+0)

FIRE F254 Wildland Fire Finance Function
3 Credits Offered Fall
Fire business management objectives, including duties and responsibilities of a fire finance section relating to management practices and programs. Procedures required in various finance positions including financial management of a large complex wildland fire. ***Prerequisites: FIRE F151; FIRE F153; or permission of instructor.*** (3+0)

FIRE F256 Wildland Fire Planning and Multiple Use Management
3 Credits Offered Fall Odd-numbered Years
Fire management and its role in a multiple use resource program. Includes prescribed and wildfire practices, environmental concerns, management goals and objectives, and pre-fire planning. ***Prerequisites: FIRE F151; FIRE F153; FIRE F155; or permission of instructor.*** (3+0)

FIRE F258 Wildland Fuels Management
3 Credits Offered Spring Even-numbered Years
Use of fire as a resource management tool. Natural and prescribed fire planning. Development and procedures to meet management objectives, components for conducting safe, prescribed burning. ***Prerequisites: FIRE F151; FIRE F153; FIRE F155; FIRE F158; FIRE F262; or permission of instructor.*** (3+0)

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FIRE F262 **Wildland Fire Control II**
3 Credits Offered Fall Even-numbered Years
Instruction in tactical operations of fire line construction. Use of hand crews, heavy equipment, water and engines, firing operations, wildland/urban interface and using combinations of resources. Advanced level course for trained and experienced wildland fire fighters. ***Prerequisites: FIRE F151; FIRE F153; FIRE F155; FIRE F157; FIRE F159; FIRE F254; or permission of instructor.*** (3+0)

FIRE F270 **Wildland Fire Command Function**
3 Credits Offered Spring Odd-numbered Years
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 decisions, providing information to the media, and managing the incident from initial attack of small, non-complex fires to larger, more complex initial attack suppression organizations dealing with escape attack situations. ***Prerequisites: FIRE F151; FIRE F153; FIRE F155; FIRE F252; or permission of instructor.*** (3+0)

FIRST YEAR EXPERIENCE

FYE F100 **First Year Seminar**
1 Credit Offered Fall and Spring
An introduction, intended for first-year college students, to a current area of scholarly pursuit by faculty. Learn how faculty pursue scholarship in their discipline. An opportunity for first-year students to connect to one another and a faculty member with similar interests in small group-discussion settings and learn about collegiate life. Topics will vary by instructor. Graded Pass/Fail. Special fees apply. (1+0)

FISHERIES

FISH F101 **Introduction to Fisheries**
3 Credits Offered Fall
This course surveys principles and fields of study that fisheries resource professionals use as a guide in their careers, including basic concepts associated with fish biology and fisheries management and the application of these concepts to solve complex fisheries problems. The course explores contemporary fisheries resource issues within and beyond Alaska's borders, human values associated with fish management and conservation, and the importance of fish resources for the world's economies and cultures. (3+0)

FISH F261 **Introduction to Fisheries Utilization**
3 Credits Offered Spring
Application of harvesting, processing, preservation and marketing of Alaska's rich fisheries resources. Core course requirement for all B.A. students completing a minor in fisheries. Serves as an elective for B.S. fisheries students. Course is offered via videoconference. ***Prerequisites: BIOL F116X or CHEM F105X or permission of instructor.*** (3+0)

FISH F288 **Fish and Fisheries of Alaska**
3 Credits Offered Spring
This course will provide mid-level undergraduate students with an introduction to the biology and fisheries of Alaskan fish, shellfish and marine mammals, with important finfishes as the main focus of the course. First, we will examine important recreational, subsistence and commercial shellfish and finfish species. Next we will briefly cover fisheries economics and then turn our attention to lesser known freshwater and marine mammal fisheries in Alaska. The amount of coverage of each topic will vary depending on what is known about each group of organisms. Before enrolling students should have a basic understanding of biological and ecological concepts. This course is required of all fisheries students but should appeal to anyone interested in Alaska's fish and fisheries. ***Prerequisites: BIOL 105X and BIOL 106X; FISH 101 or permission of instructor*** Cross-listed with BIOL F288. (3+0)

FISH F290 **Fisheries Internship**
1 Credit
Under the supervision of a fisheries professional, students gain practical, professional experience through employment. Can be repeated up to four times, each for a different type of employment. The primary learning objectives for students are to gain professional experience in fisheries and refine career goals. Graded Pass/Fail. ***Prerequisites: Permission of the Fisheries Experiential Learning Coordinator/instructor; a student internship agreement form turned into the Experiential Learning Coordinator. Recommended: STAT F200X.*** (0+0+1-4)

FISH F301 **Biology of Fishes**
4 Credits Offered Fall
A broad overview of the biological diversity of fishes presented from the comparative and organismal perspectives. The course examines the relationship between physical and biological properties of aquatic environments and the anatomy, physiology, behavior and geographical distribution of living fish lineages. Topics include fish evolution, biogeography, classification, gross and fine anatomy, sensory biology, and form-function relationships. Topics are presented to highlight essential concepts generally relevant in biology. ***Prerequisites: BIOL F116X or equivalent; junior or senior standing. Recommended: BIOL F317. Cross-listed with BIOL F301.*** (3+3)

FISH F315 **Freshwater Fisheries Techniques**
3 Credits Offered Maymester Even-numbered Years
Introduction to laboratory and field sampling methods in aquaculture, limnology, and fisheries biology. Emphasis will be placed on the proper care and use of laboratory equipment and field sampling gears, as well as the development of sampling protocols for collecting representative, non-biased fisheries and aquatic sciences data. Special fees apply. ***Prerequisites: FISH F101; FISH F288; STAT F200X; or permission of instructor.*** (2+3)

FISH F336 **Introduction to Aquaculture**
3 Credits Offered Spring Odd-numbered Years
Contribution of Alaska's aquaculture industries including salmon ocean ranching, shellfish and kelp mariculture, contribute to the world's increasingly important aquaculture production. Survey of worldwide production, introduction to production systems, and familiarization with Alaska systems. Team taught by SFOS specialists and featuring invited lecturers, laboratory demonstrations and field trips. This course is taught in Juneau. ***Prerequisites: BIOL F115X.*** (3+0)

FISH F381 **Biology of Commercially Important Salmonid Fishes**
3 Credits Offered As Demand Warrants
Biology, life history and ecology of economically valuable salmonids. Management of salmonid fisheries. ***Prerequisites: BIOL F115X.*** (3+0)

FISH F382 **Biology of Commercially Important Marine Fishes**
4 Credits Offered As Demand Warrants
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. ***Prerequisites: BIOL F115X.*** (0+0)

FISH F383 **Biology of Commercially Important Invertebrates**
4 Credits Offered As Demand Warrants
The taxonomy, morphology, physiology and ecology of commercially important invertebrates. History of management and fisheries for the major species presented. Emphasis on Alaska species. ***Prerequisites: BIOL F115X.*** (0+0)

FISH F411 **Human Dimensions of Environmental Systems**
3 Credits Offered Fall
Study of human-environment relationships and applications to resource management. Draws on a range of social scientific approaches to the study of environmental systems, including: environmental anthropology, environmental history, historical ecology, political ecology, ethnoecology, property theory, and environmental justice. ***Prerequisites: COMM F131X or F141X; ENGL F211X or***

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F213X; F200-level course in cultural anthropology, human geography, sociology, or political science; or permission of instructor. (3+0)

FISH F412 Human-Environment Research Methods
3 Credits Offered Spring
Overview of qualitative and quantitative social science methods for studying human-environment relationships. Introduction to research ethics, research design, data collection, data analysis and data reporting. Methods and data analysis techniques include interviews, text analysis, surveys, scales, cognitive anthropology and ethnoecology, social networks, behavioral observation, and visual methods. Provides hands-on training in data collection and data analysis software. ***Prerequisites: FISH 411; junior or senior standing; or permission of instructor.*** Cross-listed with ANTH F412. (3+0)

FISH F414 Field Methods in Marine Ecology and Fisheries
3 Credits Offered Alternate Maymester
A hands-on introduction to the methods used to study ecological patterns and processes in the marine environment. Class will consist of a series of group field exercises conducted in local marine habitats. These exercises will emphasize a variety of sampling methods for documenting patterns of distribution and abundance, experimental designs for testing hypotheses and statistical interpretation of results. These skills are fundamental to most basic and applied research in marine ecology and fisheries. Thus this course provides an essential foundation for a professional career in these areas. ***Prerequisites: FISH F101; BIOL F271; or permission of instructor.*** (13.3+20)

FISH F418 Renewable Resource Management Systems
4 Credits Offered Fall Odd-numbered Years
Develops abilities to recognize, process and apply critical information in the management of renewable resources by examples from Alaska fisheries. The computer as a primary tool of resource management. This course is taught in Juneau. ***Prerequisites: STAT F200X [STAT S273-J]. Recommended: STAT F401.*** (4+0)

FISH F420 Modeling, Simulation and Ecological Theory
3 Credits Offered As Demand Warrants
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 This course is taught in Juneau. ***Prerequisites: BIOL F271 (BIOL S281-J); MATH F200X.*** (3+0)

FISH F421 Fisheries Population Dynamics
4 Credits Offered Spring Even-numbered Years
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. This course is taught in Juneau. ***Prerequisites: STAT F200X [STAT S273-J]. Recommended: FISH F418.*** (4+0)

FISH F425 Fish Ecology
3 Credits Offered Fall
Focus on the relationship of fishes to the physical, chemical, and biological features of their environment and the processes responsible for patterns of fish distribution and abundance. Concepts introduced in lectures will follow a logical progression, starting with the study of individual fish moving towards investigations of populations, metapopulations, and assemblages. ***Prerequisites: BIOL F115X; BIOL F271; FISH F101; or permission of instructor. Recommended: FISH F288.*** (3+0)

FISH F426 Behavioral Ecology of Fishes
3 Credits Offered Spring Even-Numbered Years
Advanced understanding of behavioral responses and adaptations of fishes to natural and anthropogenic environmental variables. Students should have a sound understanding of both ecological and biological concepts relating to fish. ***Prerequisites: BIOL F115X; BIOL F116X; or permission of instructor. Recommended: FISH F425 or BIOL F271; FISH F427.*** Stacked with FISH F626. (3+0)

FISH F427 Ichthyology (n)
4 Credits Offered Spring
Major groups of fishes, emphasizing fishes of northwestern North America. Classification structure, evolution, general biology and importance to man. ***Prerequisites: BIOL F317.*** Cross-listed with BIOL F427. (3+3)

FISH F428 Physiological Ecology of Fishes
3 Credits Offered Spring Odd-numbered Years.
This course will provide upper-level undergraduate and graduate students with an advanced understanding of physiological responses and adaptations of fishes in both freshwater and marine systems to natural and anthropogenic environmental variables. It should provide students with another option to fulfill upper-level undergraduate and graduate level elective coursework. Before enrolling, students should have a sound understanding of both ecological and biological concepts relating to fish. ***FISH F301 or BIOL F310 or permission of the instructor.*** (3+0)

FISH F436 Salmon Culture
3 Credits
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. This course is taught in Juneau. ***Prerequisites: BIOL F222 [BIOL S209-J]; CHEM F106X; FISH F381.*** (3+0)

FISH F445 Sampling Methods in Fisheries
3 Credits Offered Spring Even-numbered Years
A review of standard and specialized sampling techniques in aquatic habitats. Basic sampling theory and statistical consideration, demonstrations, use of field laboratory techniques, shipboard sampling. This course is taught in Juneau. ***Prerequisites: STAT F200X [STAT S273-J].*** (2+2)

FISH F450 Practicum in Fisheries: Fisheries Observer Program
3 Credits Offered As Demand Warrants
Practical experience as a fisheries biologist onboard an Alaska commercial fishing vessel doing independent work at sea as an agent for the National Marine Fisheries Service or the Alaska Department of Fish and Game. Simultaneous to credit, the student/observer will be under contract and receive reimbursement for deployment. May be repeated for additional credit during different deployments as observer. Graded Pass/Fail. Special fees apply. ***Prerequisites: STAT F200X or permission of instructor.*** (0+1-12)

FISH F460 Food Science and Technology Internship
3-6 Credits Offered As Demand Warrants
A combination of traditional and industrial training opportunities. Assigned required readings and discussion of appropriate topics in food science and technology. Information applied during hands-on experience in a food processing plant. Discussion includes fundamental information and solutions to industrial problems. Faculty mentor assigned to each intern. Required written evaluation of internship. 30 hours in-plant work experience for 12-24 weeks. Note: Course offered only in Kodiak. ***Prerequisites: 16 credits in natural sciences; MATH F200X or MATH F272X; or permission of instructor.*** Cross-listed with FSN F460. (1+0+3)

FISH F487 W,O Fisheries Management
3 Credits Offered Spring
Theory and practice of fisheries management, with an emphasis on strategies utilized for the management of freshwater and marine fisheries. Application of quantitative methodologies for the assessment and manipulation of aquatic habitats, sport and commercial fish populations, and stock assessment are considered, as is the setting of appropriate goals and objectives for effective, science-based management. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; ENGL F414; FISH F425; or permission of instructor.*** Cross-listed with NRM F487. (3+0)

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FISH F490 Experiential Learning — Fisheries Internship
1 Credit
Under the supervision of a faculty member and a fisheries professional, upper-division students gain professional experience through employment. Requirements are decided prior to enrollment based on a 3-way agreement between the employer, student, and faculty member, which contains learning objectives that reflect upper-division credit. Can be repeated up to 4 times, each for a different type of employment. Graded Pass/Fail. ***Prerequisites: Junior or senior standing plus permission of Faculty Sponsor and the Fisheries Experiential Learning Coordinator/instructor (the Coordinator can be a sponsor as well); signing of a student internship agreement form that contains learning objectives for the internship that reflects upper-division internship credit. Recommended: FISH F315; STAT F200X; STAT F401.*** (0+0+1-4)

FISH F499 Fisheries Senior Thesis
2 Credits
Prerequisites: ENGL F414; STAT F200X; Fisheries major with senior standing and a GPA of 3.2 or higher; permission of Faculty mentor and the Fisheries Experiential Learning Coordinator/instructor (the Coordinator may be a mentor) after submission of a preproposal. Recommended: FISH F315; STAT F401; STAT F402. (0+0+2-4)

FISH F601 Quantitative Fishery Science
3 Credits Offered Spring Even-numbered Years
(2+3)

FISH F603 Writing for Fisheries and Ocean Sciences Workshop
1 Credit Offered Spring
Skills required to prepare and present fisheries technical information in journal articles and other formats. Proficiency in writing, editing, peer reviewing written fisheries and ocean sciences communications. Requires graduate standing and requires students to write about data gathered for graduate thesis. Students bring their own research data as basis for work. Graded Pass/Fail. ***Prerequisites: ENGL F414 or ENGL F614 or permission of instructor.*** (1+0)

FISH F604 Modern Applied Statistics for Fisheries
4 Credits Offered Odd-numbered Years
Covers general statistical approaches to quantitative problems in marine science and fisheries with guidance on how to collect and organize data, how to select appropriate statistical methods and how to communicate results. A variety of advanced statistical methods for analyzing environmental data sets will be illustrated in theory and practice. ***Prerequisites: STAT F200; STAT F401; proficiency in computing with R or permission of instructor.*** Cross-listed with: MSL F604. (3+3)

FISH F612 Fish Conservation Biology
4 Credits Offered Fall Odd-numbered Years
Conservation biology is an applied science that deals with maintaining and restoring threatened populations. Includes theoretical foundations of conservation biology and the practical lessons to be gained from studying historical conservation efforts. Emphasis on case studies. ***Note: This course is taught in Juneau.*** (3+2)

FISH F615 Fish Bioenergetics
3 Credits
Fundamentals of bioenergetics as they apply to sub-arctic fish, basic components of fish growth, energy requirements and energy storage. Analysis of energy required to survive, feed and reproduce successfully. Ecosystem-level trophodynamics and their role in individual as well as population success; the use of biomass and energy-based models to quantify fish growth, consumption rates, biomass removals, assimilation efficiencies and developing bioenergetic models Course offered in Kodiak and via videoconference in Fairbanks and Juneau. (3+0)

FISH F621 Estimation of Fish Abundance
3 Credits Offered Fall Even-numbered years.
Estimation of abundance of fish and other aquatic populations, using mark-recapture, line-transect, catch-effort and change-in-ratio techniques. Computer lab work and homework from actual and simulated populations. ***Prerequisites: MATH F201X; STAT F401; familiarity with PC's including word processing and spreadsheets. Recommended: FISH F421; MATH F302; MATH F314.*** (2+2.5)

FISH F622 Quantitative Fish Population Dynamics
3 Credits Offered Spring Odd-numbered years
Modeling fish population mortality, recruitment individual growth and fecundity. Models and assessment techniques for age- and length-structured populations. Biological reference points and management strategies derived from population and harvesting parameters. Computer lab work and homework with data from actual and simulated populations. This course is taught in Juneau. ***Prerequisites: MATH F201X; STAT F401; Familiarity with PC's including word processing and spreadsheets. Recommended FISH F421; MATH F302; MATH F314.*** (2+2.5)

FISH F625 Population Dynamics of Vertebrates
4 Credits Offered Spring Odd-numbered Years
Sampling vertebrate populations, modeling their population dynamics and the implications for management. Focus will be on study design, model assumptions, estimation of population parameters, and population projections. State-of-the-art computer applications will be employed in laboratory exercises of actual and simulated data. This course is taught in Juneau. ***Prerequisites: BIOL F271; STAT F401.*** Cross-listed with WLF F625. (3+3)

FISH F626 Behavioral Ecology of Fishes
3 Credits Offered Spring Even-numbered Years
Advanced understanding of behavioral responses and adaptations of fishes to natural and anthropogenic environmental variables. Students should have a sound understanding of both ecological and biological concepts relating to fish. ***Prerequisites: BIOL F115X; BIOL F116X; or permission of instructor; Recommended: FISH F425 or BIOL F271, FISH F427*** Stacked with FISH F426. (3+0)

FISH F627 Statistical Computing with R
2 Credits Offered Fall, As Demand Warrants
Using the free, open-source software R to teach computing, programming, and modeling concepts for the statistical computing of fisheries and biological data. Prepares students for other graduate-level, quantitative fisheries courses and covers exploratory statistical and graphical analyses, as well as computer-intensive methods such as bootstrapping and randomization tests. ***Prerequisites: STAT F200X or equivalent, STAT F401 or equivalent, and proficiency with Excel; or permission of instructor.*** Cross-listed with MSL F627. (1+3)

FISH F628 Physiological Ecology of Fishes
3 Credits Offered Spring Odd-numbered Years.
This course will provide upper-level undergraduate and graduate students with an advanced understanding of physiological responses and adaptations of fishes in both freshwater and marine systems to natural and anthropogenic environmental variables. It should provide students with another option to fulfill upper-level undergraduate and graduate level elective coursework. Before enrolling, students should have a sound understanding of both ecological and biological concepts relating to fish. ***Prerequisites: FISH F301 or BIOL F310, graduate standing or permission of instructor.*** (3+0)

FISH F630 Natural Resource Modeling
2 Credits Offered Spring Odd-numbered Years
A hands-on introduction to the techniques and issues involved in modeling natural resources. Students will complete an individual modeling project related to each student's graduate research. This course is taught in Juneau. ***Prerequisites: FISH F421 and STAT F401 or equivalents.*** (1+3)

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FISH F631 **Data Analysis in Community Ecology**
3 Credits Offered Spring Odd-numbered years
This course will provide an overview of statistical methods that have been specifically developed to aid our understanding and interpretation of the structure, abundance, and distribution of species and communities in relation to resources and the environment. ***Prerequisites: STAT F200; STAT F401 or equivalent; FISH 693 (Stat Comp. with R) or familiarity with R, General Ecology, Graduate standing in Fisheries or permission of instructor.*** Cross-listed with MSL F631. (3+0)

FISH F633 **Pacific Salmon Life Histories**
3 Credits Offered Fall Even-numbered Years
Life history patterns of species and stocks of Pacific salmon compared. Evolutionary models to explain the variety of patterns. Effects of human activities on species and stock; conservation of salmon resources. Discussion and analysis of readings. This course is taught in Juneau. ***Prerequisites: FISH F427.*** (3+0)

FISH F640 **Management of Renewable Marine Resources**
3 Credits Offered Spring Even-numbered Years
Principles of fisheries management, along with case studies of successes and failures. Topics include management objectives, relationships of fished species to their environment, fishing methods, human dimensions, fishery data acquisition, harvest strategies, ecosystem effects of fishing, aquaculture and alternative management strategies, including ecosystem-based fishery management. ***Prerequisites: FISH F427. Recommended: FISH F487.*** (3+0)

FISH F642 **Bayesian Decision Theory for Resource Management**
4 Credits Offered Spring Even-numbered Years
Application of decision theory to problems in natural resources management. Students will learn to perform Bayesian calculations and uncomplicated decision analysis themselves. Special fees apply. ***Prerequisites: FISH F621 or FISH F630 or permission of instructor.*** Cross-listed with STAT F642. (2+2)

FISH F650 **Fish Ecology**
3 Credits Offered Fairbanks: Alternate Fall; Offered Juneau: As Demand Warrants
The ecology of fish is examined from the community aspect. Current literature on inter- and intraspecific relationships, influence of the environment on community structure, behavior and production. ***Prerequisites: Permission of instructor.*** Cross-listed with BIOL F650. (2+3)

FISH F651 **Fishery Genetics**
4 Credits Offered Spring Odd-numbered Years
Application of genetics to fisheries. Focus on Alaska fisheries including introduction to the theory of electrophoresis, stock separation, population genetics and quantitative genetics. This course is taught in Juneau. (4+0)

FISH F653J **Zooplankton Ecology**
3 Credits Offered Spring Even-numbered Years
Survey of marine zooplankton including processes and variables which influence their production and dynamics. Emphasis on the northeast Pacific ocean zooplankton community. Field and lab methods for sampling include fixing, preserving, subsampling, identifying and quantifying zooplankton collections. Laboratory techniques for culture of zooplankton include physiological measurements of bioenergetic parameters. ***Prerequisites: Invertebrate zoology course; MSL F610; or permission of instructor.*** Cross-listed with MSL F653J. (3+0)

FISH F654J **Benthic Ecology**
3 Credits Offered Spring Odd-numbered Years
Ecology of marine benthos, from subtidal to hadal zone. Methods of collecting, sorting, narcotizing, preserving and analyzing benthic assemblages, including video analytical techniques from submersibles and ROV's. Hydrothermal vent and cold seep assemblages. Physiology/energetics of benthic organisms, including animal-sediment relationships, feeding, reproduction and growth. Depth, spatial and latitudinal distribution patterns. ***Prerequisites: Invertebrate zoology course; marine biology course; or permission of instructor.*** Cross-listed with MSL F654. (3+0)

FISH F661 **Seafood Processing and Preservation**
3 Credits Offered Spring
Positive and negative aspects of processing and preservation of seafoods are discussed. Practical aspects of preservation are stressed and topics include thermal processing (canning and pasteurization), fish smoking, salting, drying, pickling, freezing, fermentation, natural preservatives and packaging. Aspects of selected processing and preservation techniques to be demonstrated in the FITC pilot plant. ***Prerequisites: BIOL F342; CHEM F451; or permission of instructor. Recommended: MATH F202X or MATH F272X.*** Cross-listed with FSN 661; FSN F661K. (3+0)

FISH F662 **Seafood Composition and Analysis**
3 Credits Offered Fall
Major components of foods, their properties, analysis and interactions during processing and preservation, the effect of processing on functional and nutritive value, postmortem microbial and biochemical changes especially proteins, lipids and carbohydrates. Role of minor constituents such as flavors, vitamins, toxins and carcinogens. This course is offered via videoconference ***Prerequisites: BIOL F342; CHEM F451; or permission of instructor.*** Cross-listed with FSN F662. (3+0)

FISH F665 **Aquatic Entomology**
2 Credits Offered Fall
Aquatic invertebrate taxonomy, mostly to the family level, and ecology. Includes field trips to learn collecting techniques and habitats. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor; Students must be able to safely wade in streams and wetlands.*** Cross-listed with BIOL F665. (1+3)

FISH F666 **Biological Assessment in Fisheries and Aquatic Environments**
3 Credits Offered Alternate Spring
(3+0)

FISH F675 **Political Ecology of the Oceans**
3 Credits Offered Alternate Spring
Introduction to the field of political ecology in the marine sphere. Topics include the sociology of scientific knowledge, traditional and local ecological knowledge, politics of resource management, processes of marine enclosure, environmental values, marine conservation, environmental justice, and colonialism and economic development. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with ANTH F675. (3+0)

FISH F680 **Marine Sustainability Internship**
2 Credits Offered Fall
Internship program in marine ecosystem sustainability to broaden students' interdisciplinary training, develop new research tools, build expertise outside their home discipline, gain exposure to careers, and gain a unique perspective on research problems. Internships are for a minimum of 8 weeks and take place during the summer. In the autumn students report on and meet to discuss their internship experiences. ***Prerequisites: MSL F652 or permission of instructor.*** Cross-listed with MSL F680, ANTH F680 and NRM F680. (0+0+5-16)

FOOD SCIENCE AND NUTRITION

FSN F460 **Food Science and Technology Internship**
3-6 Credits Offered As Demand Warrants
A combination of traditional and industrial training opportunities. Assigned required readings and discussion of appropriate topics in food science and technology. Information applied during hands-on experience in a food processing plant. Discussion includes fundamental information and solutions to industrial problems. Faculty mentor assigned to each intern. Required written evaluation of internship. 30 hours in-plant work experience for 12-24 weeks.

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Note: Course offered only in Kodiak. ***Prerequisites: 16 credits in natural sciences; MATH F200X or MATH F262X; or permission of instructor.*** Cross-listed with FISH F460. (1+0+3)

FSN F611 International Food Marketing Systems
3 Credits Offered As Demand Warrants
Holistic approach to examining the seafood marketing system from a global perspective. For upper undergraduates and first year graduate students. Note: This course is taught in Kodiak. ***Prerequisites: Senior or graduate standing; permission of instructor.*** (3+0)

FSN F612 Economics of Seafood Markets
3 Credits Offered As Demand Warrants
Mathematical approach to examining food markets and marketing. Basic economic principles such as price formation, market structure and welfare economics. Topics include trade and natural resource policies and bioeconomic modeling of food systems. Note: This course is taught in Kodiak. ***Prerequisites: Graduate standing; permission of instructor.*** (3+0)

FSN F613 Quantitative Marketing Research and Food System Modeling
3 Credits Offered As Demand Warrants
Quantitative market research. Bioeconomic modeling for food systems such as optimal harvest for wild-caught and farm-raised aquatic products in different scenarios. Note: This course is taught in Kodiak. ***Prerequisites: FSN F611; MATH F200X or equivalent; STAT F200X or equivalent; or permission of instructor.*** (3+0)

FSN F614 Food Marketing Management
3 Credits
How to think like a marketing manager, marketing opportunities, developing marketing strategies, planning marketing programs and managing the marketing effort for food products. Note: This course is taught in Kodiak. ***Prerequisites: FSN F611; FSN F612; graduate standing; or permission of instructor.*** (3+0)

FSN F661 Seafood Processing and Preservation
3 Credits Offered Spring
Positive and negative aspects of processing and preservation of seafoods are discussed. Practical aspects of preservation are stressed and topics include thermal processing (canning and pasteurization), fish smoking, salting, drying, pickling, freezing, fermentation, natural preservatives and packaging. Aspects of selected processing and preservation techniques to be demonstrated in the FITC pilot plant. ***Prerequisites: BIOL F342; CHEM F451; or permission of instructor. Recommended: MATH F202X or MATH F272X.*** Cross-listed with FISH F661; FSN F661K (3+0)

FSN F661K Seafood Processing and Preservation
3 Credits Offered Spring
Positive and negative aspects of processing and preservation of seafoods are discussed. Practical aspects of preservation are stressed and topics include thermal processing (canning and pasteurization), fish smoking, salting, drying, pickling, freezing, fermentation, natural preservatives and packaging. Aspects of selected processing and preservation techniques to be demonstrated in the FITC pilot plant. Note: This course is taught in Kodiak. ***Prerequisites: BIOL F342; CHEM F451; or permission of instructor. Recommended: MATH F202X or MATH F272X.*** Cross-listed with FISH F661; FSN F661. (3+0)

FSN F662 Seafood Composition and Analysis
3 Credits Offered Fall
Major components of foods, their properties, analysis and interactions during processing and preservation, the effect of processing on functional and nutritive value, postmortem microbial and biochemical changes especially proteins, lipids and carbohydrates. Role of minor constituents such as flavors, vitamins, toxins and carcinogens. This course is offered via videoconference. ***Prerequisites: BIOL F342; CHEM F451; or permission of instructor.*** Cross-listed with FISH F662 (3+0)

FSN F663 Statistical Quality Control and Sensory Evaluation
3 Credits
Principles of quality control and assurance; quality control philosophy and development of quality control systems and their application in the seafood industry; procedures and test methods used to evaluate the sensory properties of seafood products; use and application of statistical methods in quality control and sensory analysis. Note: This course is taught in Kodiak. ***Prerequisites: STAT F200X; or STAT F300; or permission of instructor.*** (3+0)

FSN F671 Unit Operations in Food Processing
4 Credits
Engineering principles governing the transfer and change of materials and energy primarily by physical means will be discussed. Unit operations covered are refrigeration, freezing, thermal processing, evaporation, drying, contact equilibrium processed (washing and extraction), sedimentation, centrifugation, filtration and mechanical size reduction. Note: This course is taught in Kodiak. ***Prerequisites: MATH F200X; FSN F661K; ME F441 is desirable; or permission of instructor.*** (3+3)

FSN F672 Laboratory Methods in Food Science and Nutrition
4 Credits
Provides a graduate-level laboratory experience of standard food chemistry, food biochemistry, food microbiology, physical properties of food and food sensory methods. Note: This course is taught in Kodiak. ***Prerequisites: FSN F662; or permission of instructor.*** (4+0)

FSN F673 Current Topics in Food Science and Nutrition
3 Credits
Recent advances in food science and nutrition and their application to food production. Study of research problems in food chemistry, food engineering and food microbiology. Topics may include nutritional effects of food processing, innovative processing methods for underutilized species and application of technologies from other industries. Note: This course is taught in Kodiak. ***Prerequisites: 6 credits in FSN F600-level courses or permission of instructor.*** (3+0)

FSN F692 Food Science and Nutrition Seminar
1 Credit Offered As Demand Warrants
Selected topics in food science and nutrition are presented by graduate students and guest speakers. Requires a high level of student participation. This course is offered via videoconference. Graded Pass/Fail. ***Prerequisites: Graduate standing in Interdisciplinary degree program in Seafood Science and Nutrition or another degree program; or permission of instructor.*** (1+0)

FSN F692K Food Science and Nutrition Seminar
1 Credit Offered As Demand Warrants
Selected topics in food science and nutrition are presented by graduate students and guest speakers. Required a high level of student participation. This course is offered via videoconference. Note: This course is taught in Kodiak. Graded Pass/Fail. ***Prerequisites: Graduate standing in Interdisciplinary degree program in Seafood Science and Nutrition or another degree program; or permission of instructor.*** (1+0)

FOREIGN LANGUAGES

FL F200X World Literature (h)
3 Credits
Introduction to critical reading and appreciation of a wide variety of literary texts from different cultures. Includes exposure to a variety of approaches to myth, poetry, story telling 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. ***Prerequisites: ENGL F111X or placement in ENGL F211X/ENGL F213X; sophomore standing; or permission of instructor.*** Cross-listed with ENGL F200X. (3+0)

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FL F451 **Foreign Language Teaching Practicum**
4 Credits Offered Fall
Methodology workshop for the advanced second language student. Includes language acquisition and pedagogy and employment of these techniques in a lower level language classroom under the supervision of a classroom teacher. ***Prerequisites: Completion through the F200-level language classes. Recommended: Completion of the F300-level language classes is recommended.*** (3+0+3-5)

FRENCH

FREN F101 **Elementary French I** (h)
5 Credits Offered Fall
Introduction to the French 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 audiovisual materials. (5+0)

FREN F102 **Elementary French II** (h)
5 Credits Offered Spring
Introduction to the French 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 audiovisual materials. ***Prerequisites: FREN F101 or equivalent*** (5+0)

FREN F103 **Conversational French I** (h)
3 Credits Offered As Demand Warrants
Oral skills improvement. Includes group work, presentations, skits, discussions and vocabulary to improve speaking on specific topics. Graded Pass/Fail. ***Prerequisites: FREN F102 or equivalent or permission of instructor. Does not satisfy core curriculum or foreign language major requirements.*** (3+0)

FREN F201 **Intermediate French I** (h)
3 Credits Offered Fall
Continuation of FREN F102. Increasing emphasis on reading ability and cultural material. Conducted in French. ***Prerequisites: FREN F102 or equivalent.*** (3+0)

FREN F202 **Intermediate French II** (h)
3 Credits Offered Spring
Increasing emphasis on reading ability and cultural material. Conducted in French. ***Prerequisites: FREN F201 or equivalent.*** (3+0)

FREN F203 **Conversational French II** (h)
3 Credits Offered As Demand Warrants
Oral skills improvement. Includes group work, presentations, skits, discussions and vocabulary to improve speaking on specific topics. Graded Pass/Fail. ***Prerequisites: FREN F102 or equivalent or permission of instructor. Does not satisfy core curriculum or foreign language major requirements.*** (3+0)

FREN F301 O **Advanced French** (h)
3 Credits Offered Fall
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in French. ***Prerequisites: COMM F131X or COMM F141X; FREN F202 or equivalent; or permission of instructor.*** (3+0)

FREN F302 O **Advanced French** (h)
3 Credits Offered Spring
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in French. ***Prerequisites: COMM F131X or COMM F141X; FREN F301 or equivalent; or permission of instructor.*** (3+0)

FREN F431 W **Studies in the Culture of the French Speaking World** (h)
3 Credits Offered Fall Odd-numbered Years
Intensive study of selected aspects of the culture of the French-speaking world. Course may be repeated for credit if topic varies. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; FREN F302 or equivalent; junior standing; or permission of instructor.*** (3+0)

FREN F432 W **Studies of French Literature** (h)
3 Credits Offered Fall Even-numbered Years
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. Course may be repeated for credit if topic varies. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; FREN F302 or equivalent; junior standing; or permission of instructor.*** (3+0)

FREN F488 **Individual Study: Senior Project** (h)
3 Credits Offered As Demand Warrants
The student will demonstrate the 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 ten credits in upper-division French or permission of instructor.*** (3+0)

GEOGRAPHY

GEOG F101 **Expedition Earth: Introduction to Geography** (s)
3 Credits
Introduction to essential concepts and approaches of geographic study. Explores physical, political, economic and cultural geography of major world culture regions. Examines each region in relation to others, and in context of global economic, political and environmental change. Also available via Independent Learning. (3+0)

GEOG F111 **Earth Systems: Elements of Physical Geography**
3 Credits
Interdisciplinary analysis of the processes that form Earth's physical environment, and how those processes condition the human environment. Includes system interactions among weather, climate, landforms, soils, water resources and vegetation, including world and regional patterns. Also available via Independent Learning. (Offered every spring at the Northwest Campus.) (3+0)

GEOG F111X **Earth and Environment: Elements of Physical Geography** (n)
4 Credits
Introduction to Earth's dynamic environments, systems, and cycles. Major course sections include: 1) Landscapes- continents, oceans, mountains and landforms. 2) Weather and Climate- weather, storms, climate change, ocean systems, and 3) Ecosystems and Biomes found on Earth. Examine how Earth systems are dynamically linked, how they change, and how humans influence and are conditioned by the environment. Lab section includes map and aerial photo interpretation, field trips, introduction to remote sensing of patterns on Earth. (Offered every spring at the Northwest Campus.) Special fees apply. (4+0)

GEOG F203 **World Economic Geography** (s)
3 Credits Offered As Demand Warrants
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. (3+0)

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GEOG F207 **Research Methods and Statistics in Geography**
3 Credits Offered Spring Odd-numbered Years
Introduction to basic data collection and analysis techniques used in geographic research. Explores a variety of qualitative and quantitative geographic research methods. Includes research design, real-world field-work issues, and hands-on use of tools and computer methods for analysis and visual display of spatial data. Students will gain an appreciation of the wide array of research methods and learn to critically interpret results and conclusions from both quantitative and qualitative perspectives. ***Prerequisites: Placement in MATH 103X or MATH 107X or permission of instructor.*** (3+0)

GEOG F300 **Internship in Natural Resources Management and Geography**
1-6 Credits Offered As Demand Warrants
Supervised pre-professional experience in a business or agency (public or private). Open to students majoring or minoring in natural resources management and geography only. Course may be repeated for credit up to a maximum of 6 credits. ***Prerequisites: NRM F101 for natural resources management majors or GEOG F101 for geography majors; junior standing with 3.0 GPA; permission of instructor; an approved internship plan.*** Cross-listed with NRM F300. (1-6+0)

GEOG F301 **Geographic Field Studies**
3 Credits Offered As Demand Warrants
Application of geographic methods for conducting field investigations. Involves planning and preparation for field study and collection, analysis, interpretation, and reporting of data collected through field study of natural and human phenomena. ***Prerequisites: Permission of instructor.*** (3+0)

GEOG F302 **Geography of Alaska** (s)
3 Credits Offered Spring
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. (3+0)

GEOG F303 **Geography of United States and Canada** (s)
3 Credits Offered Fall Even-numbered Years
In-depth examination of the natural, political, cultural, and economic characteristics of the U.S. and Canada and their major sub-regions. Explores contrasts in U.S. and Canadian historical, cultural and political geography; sources of national identity; and interactions with aboriginal peoples. Includes economic and political relationships between the two countries, and the role each has played in current and historical world affairs. ***Prerequisites: An introductory geography course or background in United States or Canadian history, social science, or cultures; or permission of instructor.*** (3+0)

GEOG F305 W **Geography of Europe** (s)
3 Credits Offered Spring Even-numbered Years
In-depth examination of the natural, political, cultural and economic characteristics of Europe and its major sub-regions. Explores current political and economic transformations, historical and contemporary world influences, and issues of nationalism and identity. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; an introductory geography course or background in European history, social science, or culture; or permission of instructor.*** (3+0)

GEOG F306 **Geography of Russia** (s)
3 Credits Offered Spring Even-numbered Years
The physical, cultural and historical geography of Russia and the Ukraine, Central Asia, Siberia and parts of Eastern Europe. (3+0)

GEOG F307 **Weather and Climate**
3 Credits Offered Spring Even-numbered Years
Weather systems and climate classification. Emphasis on weather system processes, measuring weather variables and physical processes of the atmosphere. ***Prerequisites: GEOG F111 or GEOG F111X; or permission of instructor.*** (3+0)

GEOG F309 **Digital Cartography and Geo-Visualization** (s)
4 Credits Offered Spring Odd-numbered Years
The concepts of map design, layout and presentation to effectively visualize and communicate complex spatial data. Special fees apply. ***Prerequisites: Permission of instructor.*** (4+0)

GEOG F311 W **Geography of Asia** (s)
3 Credits Offered Fall Even-numbered Years
Examines the natural, political, cultural, and economic characteristics of China, Japan, India-Pakistan, Southeast Asia, and the Asiatic countries of the Middle East. Explores historical and current political and economic transformations, historical, and contemporary world influences, and foundations of regional political, economic, and military conflicts. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; an introductory geography course or background in Asian history, social science, or culture; or permission of instructor.*** (3+0)

GEOG F312 **People, Places, and Environment: Principles of Human Geography** (s)
3 Credits Offered Spring Odd-numbered Years
Examines how human activity manifests itself on the earth's surface through the geographic lenses of ethnicity, politics, industry, language, religion, and demographics. Explores spatial patterns, relationships and contrasts between places, origin and diffusion of traits, and human interactions with the environment. ***Prerequisites: GEOG F101 or GEOG F203; or permission of instructor.*** (3+0)

GEOG F338 **Introduction to Geographic Information Systems**
3 Credits Offered Fall
Geographic data concepts including mapping systems, data sources, editing data, GIS analysis and computer mapping. Introduction to global positioning systems. GIS applications in natural resources management. ***Prerequisites: Knowledge of PC's or Unix workstations desirable.*** Cross-listed with NRM F338. (2+3)

GEOG F339 **Maps and Landscape Analysis** (n)
3 or 4 Credits Offered Spring
Topographic map interpretation for landscape analysis and geographic data acquisition, including topographic features, vegetation patterns, and political and cultural features. Emphasis on topographic maps for remote data acquisition and environmental impact analysis. Optional laboratory for one additional credit. ***Prerequisites: GEOG F101 or GEOG F203; GEOG F111X; GEOS F304.*** (3+0 or 3)

GEOG F402 **Resources and Environment** (s)
3 Credits Offered Fall Even-numbered Years
Interdisciplinary analysis of the Earth as a natural resource base, and the management issues of resource extraction, allocation, development, conservation and preservation. ***Prerequisites: GEOG F101; GEOG F111X.*** (3+0)

GEOG F404 W **Urban Geography** (s)
3 Credits Offered As Demand Warrants
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. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; GEOG F101.*** (3+0)

GEOG F405 **Political Geography** (s)
3 Credits Offered As Demand Warrants
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. ***Prerequisites: GEOG F101.*** (3+0)

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GEOG F410 Geography of the Pacific Rim
3 Credits Offered Fall Odd-numbered Years
Examines the physical and human geography of the Pacific Rim. Will employ both a global and topical approach and include aspects of environmental, historic, economic, social, and political issues. Regional studies on physical and human geographic attributes of selected countries will be analyzed and compared. ***Prerequisites: GEOG F101; GEOG F111; or permission of instructor. Recommended: GEOG F338 or GEOG F341.*** (3+0)

GEOG F411 Pattern and Process in Sub-Arctic and Arctic
3 Credits Offered Fall
Explore the linkages between climate, geomorphology and plant communities in sub-arctic and arctic environments. Special focus will be on the interconnection between physical and ecological processes and the landscape patterns that result. ***Prerequisites: BIOL F271; GEOG F339; GEOS F304; or permission of instructor.*** (3+0)

GEOG F412 Geography of Climate and Environmental Change
3 Credits Offered Fall
Serves as a "synthesis" breadth course focusing on the geography of climate and environmental change. The major concepts of global climate processes and climate change will be reviewed on multiple time scales. The impacts of natural and anthropogenic environmental change will be examined through selected case studies and readings (e.g. permafrost, invasive species, sea ice, fire, urbanization). ***Prerequisites: BIOL F271; GEOG F401; or permission of instructor.*** (3+0)

GEOG F418 Biogeography
3 Credits Offered Fall
This course explores the geography of life by examining linkages between climate, geomorphology, and ecological communities with emphasis on the biogeography of subarctic, polar, and alpine regions. ***Prerequisites: BIOL F271 or NRM 277; junior/senior standing or permission of the instructor.*** (3+0)

GEOG F420 Geopolitics of Energy (s)
3 Credits Offered Spring Odd-numbered Years
Examines the impacts that energy resource exploration, development, production, and transportation have on the internal politics of various countries in the world, and on international economic and political relationships. Explores the cultural, political, economic, physical, and historical underpinnings of contemporary geopolitical events involving energy resources, and explores possible future scenarios. ***Prerequisites: Any of the following courses: GEOG F101; GEOG F203; GEOG F312; GEOG F405; NRM F101; NRM F304; PS F201; PS F203; PS F321; PS F323; ECON F235; ECON F335; ECON F349; ECON F463; junior standing; or permission of instructor. Recommended: GEOG F101.*** (3+0)

GEOG F427 Polar Geography (s)
3 Credits Offered Spring
Comparative physical, cultural, political and economic geography of the Circumpolar North and Antarctic regions. Special attention given to Arctic natural resource and climate change in both polar regions. ***Prerequisites: GEOG F101 or GEOG F203 or GEOG F111X; or permission of instructor.*** Stacked with: GEOG F627; NORS F627. Crosslisted with: NORS F427. (3+0)

GEOG F430 Google Earth and Neogeography
3 Credits Offered Fall
Neogeography is a term used to describe "new" primarily web-based mapping techniques and technologies. This course teaches neogeography through the use of Google Earth, a free computer application often called a "Virtual Globe", which provides the base imagery, terrain data and viewing functionality. Students will learn to create location-based visualizations of geospatial data in Google Earth using Keyhole Markup Language (KML). The methods and skills learned by the students will be applicable to assignments in many other classes and thesis research projects as a way of producing dynamic visualizations from any dataset with a geospatial component. ***Prerequisites: junior standing or higher with completed course work in geographic methods (GEOG F338, F339, F304) or 300-level course work in other natural/social sciences; or permission of instructor.*** (3+0)

GEOG F435 GIS Analysis
4 Credits Offered Spring
GIS analysis of natural resources including spatial query, attribute query, vector, grid, image, topographic and network analysis techniques. Cross-listed with NRM F345. (4+0)

GEOG F463 Wilderness Concepts
3 Credits Offered Fall
History and evolution of wilderness thought, the contemporary meaning of wilderness, and survey of economic and noneconomic wilderness values for individuals and society. Cross-listed with NRM F463. Stacked with GEOG F663; NRM F663. (3+0)

GEOG F464 Wilderness Management
3 Credits Offered Spring
Wilderness ecology and land management practices on lands designated as wilderness. Plus, visitor management regimes are analyzed. Both national and international views of wilderness are presented. ***Prerequisites: A basic course in ecology; resource management; or permission of instructor.*** Cross-listed with NRM F464 (3+0)

GEOG F475 National Park Concepts
3 Credits Offered Spring Even-numbered Years
History of the national park ideal, the evolution of the National Park Service, and the geography of the national park system. Contemporary national park policy and management case studies, including controversies resulting from competing visions. ***Prerequisites: Junior standing or permission of instructor.*** (3+0)

GEOG F488 Geographic Assessment and Prediction of Natural Hazards
3 Credits Offered Fall
Integrate aspects of physical geography with the human dimension via the study of the assessment and prediction of natural hazards. Guest speakers, case studies, and applied practical exercises will help students transition from content-based courses to applying their knowledge in "real-world" situations, using geographic tools in remote sensing and GIS. ***Prerequisites: GEOG F341 or permission of instructor.*** (3+0)

GEOG F489 W Senior Practicum: Field Studies in Landscape Analysis and Climate Change (n)
4 Credits Offered Fall
Capstone field practicum for the Landscape Analysis and Climate Change track in Geography. The entire semester will be focused on a "real-world" field-based project designed to integrate knowledge and apply skills gained through this Geography B.S. track. Course will focus on different problems each semester. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; GEOG F341; GEOS F378; senior standing in Geography; or permission of instructor. Recommended: GEOG F411.*** (3+3)

GEOG F490 W,O Geography Seminar (s)
3 Credits Offered Spring
Discussion of geographic thought including past, present and future directions of the discipline. Contributions of geography to science, philosophy and ethics integrated through detailed review of contemporary literature and research. ***Prerequisites: COMM F131X or F141X; ENGL F111X; ENGL F211X or ENGL F213X; senior Geography major; permission of instructor.*** (3+0)

GEOG F618 Biogeography
3 Credits Offered Fall
This course explores the geography of life by examining linkages between climate, geomorphology, and ecological communities with emphasis on the biogeography of subarctic, polar and alpine regions. Cross-listed with BIOL F618 ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

GEOG F627 Polar Geography
3 Credits Offered Spring
Comparative physical, human and economic geography of cold regions in the North, especially Canada, Siberia, Greenland and Scandinavia. Special

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attention given to spatial patterns of settlement and natural resource development. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with NORS F627. Stacked with GEOG F427; NORS F427. (3+0)

GEOG F663 Wilderness Concepts
3 Credits Offered Fall
History and evolution of wilderness thought, the contemporary meaning of wilderness, and survey of economic and noneconomic wilderness values for individuals and society. Cross-listed with NRM F663. Stacked with GEOG F463; NRM F463. (3+0)

GEOG F692 Graduate Seminar
1-6 Credits
Topics in natural resources management and geography explored through readings, student presentations, group discussions and guest speakers. ***Prerequisites: Graduate standing or permission of instructor.*** (0+0)

GEOLOGICAL ENGINEERING

GE F101 Introduction to Geological Engineering
1 Credit
Multiple aspects of geological engineering as a profession; the area and scope of the field. Graded Pass/Fail. (1+0)

GE F261 General Geology for Engineers
3 Credits
Study of common rocks and minerals, landforms and erosion. Geologic materials and engineering application of geology. ***Prerequisites: MATH F107X; MATH F108X or equivalent; Geology, science or engineering majors, or permission of instructor.*** (2+3)

GE F322 Erosion Mechanics and Conservation
3 Credits Offered Spring or As Demand Warrants
Engineering mechanics of water and wind erosion processes, types of geologic or anthropogenic induced erosion, application of engineering principles for design, management and control of erosion and engineering analysis of conservation structures. ***Prerequisites: ES F341 or permission of instructor.*** (3+0)

GE F365 Geological Materials Engineering
3 Credits
Identification and classification of soils, physical and mechanical properties of soil, interaction of soils with subsurface water, subsurface exploration and case studies with an emphasis on permafrost. ***Prerequisites: ES F208; GE F261; or permission of instructor.*** (2+3)

GE F372 Rock Engineering
3 Credits
Rock engineering related to tunnels, slope design and strata control. Some field work and student report. ***Prerequisites: GEOS F101X or GE F261; ES F208 or ES F209.*** (3+0)

GE F375 Principles of Engineering Geology and Terrain Analysis
3 Credits
Evaluation of terrain characteristics using basic geomorphic and engineering principles. Alaskan applications are provided due consideration. ***Prerequisites: GE F261.*** (3+0)

GE F376 GIS Applications in Geological and Environmental Engineering
3 Credits
Fundamentals, concepts and components of geographic information systems (GIS) in engineering design. Introduction to acquiring, manipulating and analyzing digital terrain data for geological engineering and environmental applications, and the assessment to mineral resources. ***Prerequisites: GE F261 or equivalent; GE F375 or equivalent. NRM F338 Recommended.*** (2+3)

GE F378 Introduction to Geoinformatics
3 Credits Offered Spring
A multidisciplinary course providing theoretical understanding and hands-on experience with acquiring field data using palmtops and hand-held GPS; processing of remote sensing data acquired from airplanes and satellites; concept of data integration in GIS mode; database management; and cartographic visualization of final product. ***Prerequisites: PHYS F103X or PHYS F211X or permission of instructor.*** Cross-listed with GEOS F378. (2+3)

GE F381 W Field Methods and Applied Design I
2 Credits
Techniques and geologic mapping and geotechnical instrumentation applied to engineering design and resource evaluation. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; GE F261; GEOS F213; GEOS F214; GEOS F322; GEOS F332 or equivalent.*** (0+9+3)

GE F382 W Field Methods and Applied Design II
4 Credits
Techniques and geologic mapping and geotechnical instrumentation applied to engineering design and resource evaluation. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; GE F261; GEOS F213; GEOS F214; GEOS F322; GEOS F332 or equivalent.*** (0+9)

GE F384 Engineering Geology of Alaska
4 Credits
A survey of the geology of Alaska relevant to the definition of natural and human-induced geological engineering hazards, the evaluation of sources of and specifications for engineering materials, and the evaluation of engineering construction sites. ***Prerequisites: Upper-division standing; permission of instructor.*** (3+1+2)

GE F400 Geological Engineering Internship
1-3 Credits
Supervised work experience in engineering organizations. Assignments will be individually arranged with cooperating organizations from the private and public sectors. A report of activities must be completed and reviewed by the sponsoring organization. The report may be held in confidence at the request of the sponsoring organization. Graded Pass/Fail. ***Prerequisites: Upper-division standing; permission of instructor.*** (1-3+0)

GE F405 Exploration Geophysics
3 Credits
Theory and application of gravity, magnetic, electrical, electromagnetic, radioactive and seismic methods as used for geophysical exploration. Some field work. ***Prerequisites: GE F375; MATH F200X; PHYS F211X or equivalent.*** (2+3)

GE F420 Subsurface Hydrology
3 Credits
Hydrologic, geologic and other factors controlling groundwater flow, occurrence, development, chemistry and contamination. Elementary groundwater flow theory. Interactions between surface-subsurface hydrologic systems. Hydraulic characteristics of earth materials, engineering problems and models related to subsurface fluids, and properties of water. ***Prerequisites: GE F365; MATH F302; PHYS F211X; or permission of instructor.*** Stacked with GE F610. (2+3)

GE F422 Unsaturated Soil Geoengineering
3 Credits
Fundamentals of soil physical processes, multiphase flow and transport in unsaturated porous media such as soils. Application of principles of unsaturated flow to geoenvironmental and geotechnical systems. Methods for characterization of hydraulic properties in relation to soil physical parameters in the context of geoengineering problems of flow and stability. Non-isothermal flow in unsaturated soils and its impact on subsurface environment. Biogeochemical processes affecting soil and groundwater contamination. Unsaturated flow and transport modeling including heat transfer relevant to active layer dynamics and permafrost underlain soils in Alaska and other similar cold regions. ***Prerequisites: GE F420 or equivalent course; or permission of instructor.*** Stacked with GE F622. (3+0)

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GE F430 Geomechanical Instrumentation
3 Credits
Measurement of groundwater pressure, ground deformation, stress and temperature as well as the planning of monitoring programs, instrument calibration, maintenance and installation, data collection, interpretation, and reporting. Case histories are used. ***Prerequisites: ES F331; GE F261 or GEOS F101X.*** (3+0)

GE F431 Applied Ore Microscopy
2 Credits
Preparation of polished sections of ores. Identification of ore materials in reflected light by physical, optical and chemical methods. Applications to ore genesis, drill core interpretation, beneficiation and process control. ***Prerequisites: Permission of instructor.*** (1+3)

GE F435 Exploration Design
3 Credits
Geologic, engineering and economic considerations applied to the design and development of mineral exploration programs. ***Prerequisites: GEOS F314 or permission of instructor.*** (3+0)

GE F440 Slope Stability
3 Credits
Slope design for open pit mining and other excavations. Stability analysis by various methods and on-site measuring and monitoring techniques. ***Prerequisites: ES F331.*** (3+0)

GE F441 Geohazard Analysis
3 Credits
Procedures and techniques to evaluate geological factors for geohazards, such as landslides, earthquakes, volcanoes, flooding, coastal hazards and permafrost-related problems. ***Prerequisites: GE F365 or equivalent; or permission of instructor.*** (3+0)

GE F471 Remote Sensing for Engineering
3 Credits
Applications of remote sensing to geological engineering problems. Introduction to digital satellite image processing with hands-on practice. ***Prerequisites: GE F375 or permission of instructor; PHYS F212X.*** (2+3)

GE F480 W Senior Design
3 Credits
Design factors and procedures for the solution of geological engineering problems. A design project is the focus of the course. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; senior standing in the geological engineering program with completion of GE F261; GE F365; GE F375; GE F381 or equivalent; GE F382 or equivalent; GE F405; GE F420; GE F471.*** (1+6)

GE F610 Subsurface Hydrology
3 Credits
Hydrologic, geologic and other factors controlling groundwater flow, occurrence, development, chemistry and contamination. Elementary groundwater flow theory. Interactions between surface-subsurface hydrologic systems. Hydraulic characteristics of earth materials, engineering problems and models related to subsurface fluids, and properties of water. ***Prerequisites: GE F365; MATH F302; PHYS F211X; or permission of instructor.*** Stacked with GE F420. (2+3)

GE F620 Subsurface Hydrology
3 Credits Offered Fall Odd-numbered Years or As Demand Warrants
Hydrologic, geologic and other factors controlling groundwater flow, occurrence, development, chemistry and contamination. Elementary groundwater flow theory. Interactions between surface-subsurface hydrologic systems. Hydraulic characteristics of earth materials, engineering problems and models related to subsurface fluids and properties of water. ***Prerequisites: Graduate standing in Engineering or permission of instructor.*** (2+3)

GE F622 Unsaturated Soil Geoengineering
3 Credits Offered As Demand Warrants
Fundamentals of soil physical processes, multiphase flow and transport in unsaturated porous media such as soils. Application of principles of unsaturated flow to geoenvironmental and geotechnical systems. Methods for characterization of hydraulic properties in relation to soil physical parameters in the context of geoengineering problems of flow and stability. Non-isothermal flow in unsaturated soils and its impact on subsurface environment. Biogeochemical processes affecting soil and groundwater contamination. Unsaturated flow and transport modeling including heat transfer relevant to active layer dynamics and permafrost underlain soils in Alaska and other similar cold regions. ***Prerequisites: GE F620 or equivalent course; or permission of instructor.*** Stacked with GE F422. (3+0)

GE F624 Stochastic Hydrology and Geohydrology
3 Credits Offered As Demand Warrants
Overview of the stochastic methods used to study and analyze hydrolic and geohydrolic processes. Emphasis on modeling hydrolic processes using statistical methods and stochastic interplay of processes between surface and subsurface hydrology. ***Prerequisites: GE F620 or equivalent and graduate standing in Engineering; or permission of instructor.*** (3+0)

GE F626 Thermal Geotechnics
3 Credits Offered As Demand Warrants
Fundamentals of thermal regimes of soils and rocks. Thermal impact of structures on soils. Thawing of permafrost beneath roads, buildings and around pipelines. Natural and artificial freezing of soils. Engineering means to maintain thermal regime of soils. Thermal design considerations. Cross-listed with CE F626. (3+0)

GE F630 Advanced Applied Mining Geology
3 Credits
Investigative procedures used in mining geology from pre-production to terminal phases of an operation. Models ranging from open-pit to deep underground mining will be examined. Methods of mapping, sampling, ongoing evaluation and geotechnical aspects of water and ground control are examined. ***Prerequisites: GE F435.*** (2+3)

GE F631 Electron Microprobe Methods
3 Credits
Applications of electron microanalysis to mineralogy, petrology and mineral exploration development, evaluation and processing. Physics of x-rays, x-ray spectrometry and measurement; qualitative and quantitative elemental analysis using wave length and energy dispersive spectra. ***Prerequisites: Graduate standing.*** (2+3)

GE F633 Fluid Inclusion Methods in Mineral and Petroleum Exploration
3 Credits
Study of fluid inclusions in minerals. Thermodynamics, chemical and physical properties of fluids trapped in rock forming minerals or petroleum-bearing rocks. Laboratory work includes sample preparation, thermometric and direct-current plasma emission spectrographic analysis. ***Prerequisites: CHEM F331.*** (2+3)

GE F635 Advanced Geostatistical Applications
3 Credits
Introduction to the theory and application of geostatistics. Review of classical statistics, continuous and discrete distributions, hypothesis testing and global estimation. Presentation of fundamental geostatistical concepts including: variogram, estimation variance, block variance, kriging, geostatistical simulation. Emphasis on the practical application of geostatistical techniques. ***Prerequisites: MIN F408 or equivalent; graduate standing; or permission of instructor.*** Cross-listed with MIN F635. (2+3)

GE F649 Hazardous and Toxic Waste Management
3 Credits Offered Fall Odd-numbered Years
Course provides in-depth coverage of hazardous and toxic substance management including legal, economic and technical issues. Topics will include

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characterization of hazardous materials, economics of toxics minimization, hazardous materials use, storage and disposal, technical aspects of landfill siting, and selection and design of treatment technologies. Includes case studies of current waste management issues. ***Recommended: Bachelor's degree in science or engineering.*** Cross-listed with ENVE F649. (3+0)

GE F665 Advanced Geological Materials Engineering
3 Credits
In-depth study of geological materials (aggregates — sand, gravel and crushed rock for construction purposes) exploration, evaluation, testing and production. Emphasis placed on geological materials used for construction in arctic and sub-arctic environments, economic analysis of pit and quarry operations and availability of materials in Alaska. ***Prerequisites: GE F365 or equivalent; permission of instructor. Recommended: MIN F408.*** (3+0)

GE F666 Advanced Engineering Geology
3 Credits
The interaction between geology and engineering case histories. ***Prerequisites: GE F365; GE F372; graduate standing; or permission of instructor.*** (2+3)

GE F668 Tunneling Geotechniques
3 Credits
Tunnel design, case histories, student report. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

GE F671 Engineering Application of Digital Image Processing
3 Credits
Quantitative methods of using digital image processing and engineering information system. Applications include, but are not limited to, evaluation of the engineering properties of geo-materials, characterization of joint-surface conditions, enhancement of photoelastic stress patterns and identification of critical slope failure surfaces. ***Prerequisites: GE F471 or equivalent or permission of instructor.*** (3+0)

GE F692 Graduate Seminar
1 Credit
Topics in geological engineering explored through talks, group discussions and guest speakers with a high level of student participation. Graded Pass/Fail. ***Prerequisites: Graduate standing or permission of instructor.*** (1+0)

GEOLOGY AND GEOPHYSICS

A per semester fee for computing facilities will be assessed for one or more GEOS courses at the F200 level and above. This fee is in addition to any materials fees.

GEOS F100X Introduction to Earth Science (n)
4 Credits Offered As Demand Warrants
Survey of four main disciplines of earth science: geology, oceanography, meteorology, and astronomy. Lab portion serves as a: vehicle to learn scientific methodology, evidence to support theories presented in lectures. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (3+3)

GEOS F101X The Dynamic Earth (n)
4 Credits
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. Special fees apply. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (3+3)

GEOS F106X Life in the Age of Dinosaurs (n)
4 Credits Offered Spring Even-numbered Years
Promote a broader understanding of deep time through an examination of life and environments during the Mesozoic, or "Age of Dinosaurs". Discussions and exercises will focus on major events and processes that shaped the physical environments of the Mesozoic, such as the formation and break up of continents, global climate, and changing sea levels. Building on this foundation, the course will examine the fossil record to learn what it reveals about the major patterns in the diversity of terrestrial and marine life. Special emphasis will be placed on the origin, extinction, and paleobiology of dinosaurs. Important groups of contemporary vertebrates and invertebrates, including marine reptiles, mammals, flying reptiles, and ammonites will also examined. The rise of flowering plants and the importance of fossil floras in understanding Mesozoic climates will be explored. Labs will provide opportunities to examine and identify fossils and use them to reconstruct ancient environments. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105X or higher; or permission of instructor.*** (3+3)

GEOS F112X The History of Earth and Life (n)
4 Credits Offered Spring
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. Special fees apply. ***Prerequisites: GEOS F101X; placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (3+3)

GEOS F120X Glaciers, Earthquakes, and Volcanoes: Past, Present, and Future (n)
4 Credits
A survey course for the nonspecialist on the causes, effects, measurements and prediction of glaciers, earthquakes and volcanoes. Special fees apply. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (4+0)

GEOS F125X Humans, Earth, and the Environment (n)
4 Credits Offered Spring
Application of principles of the geological sciences to understanding the relationship of humans to the earth system. Investigation of geologic hazards, including prediction and mitigation, use and distribution of vital resources such as soil, water, minerals, and fossil and alternative fuel sources, especially with respect to Alaska's environment. Earth's atmospheric, oceanic and biotic systems examined in light of recent developments in global environmental change from both a modern and geologic perspective. Special fees apply. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (3+3)

GEOS F212 Geology of Alaska
3 Credits Offered As Demand Warrants
Modern geologic processes in Alaska 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. Special fees apply. ***Prerequisites: GEOS F101X or permission of instructor.*** (3+0)

GEOS F213 Mineralogy (n)
4 Credits Offered Fall
Mineral chemistry, atomic structure, elementary crystallography, optical crystallography and descriptive and determinative mineralogy. Instrumental determinative techniques (x-ray diffraction, petrographic microscope). Special fees apply. ***Prerequisites or co-requisites: CHEM F105X; GEOS F101X; MATH F107X.*** (2+6)

GEOS F214 Petrology and Petrography (n)
4 Credits Offered Spring
Origin, occurrence and classification of igneous, sedimentary and metamorphic rocks. Laboratory work involves hand lens identification and thin section examination of representative rocks. Special fees apply. ***Prerequisites: GEOS F213.*** (2+6)

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GEOS F225 Field and Computer Methods in Geology
2 Credits
Basic field methods, including field notes, topographic maps, measurement of structural elements, field safety, illustration, field mapping, and the use of GPS for field work are discussed and practiced. Use of computers for processing geologic field data and analytical data, and integration of field data into a simple Geographic Information System. Computers are used for the production of reports and technical illustration. This course will fulfill the department requirement for computer literacy. Special fees apply. ***Prerequisites: GEOS F101X.*** (1+3)

GEOS F262 Rocks and Minerals
3 Credits Offered Fall Even-numbered Years
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. Special fees apply. ***Prerequisites: GE F261, GEOS F101X or equivalent.*** (2+3)

GEOS F304 Geomorphology
3 Credits Offered Fall
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. Special fees apply. ***Prerequisites: GEOS F101X.*** (3+0)

GEOS F314 Structural Geology (n)
4 Credits Offered Spring
Introductory overview of how rocks are deformed, types of geological structures including folds, faults and penetrative fabrics, and the associations of structures characteristic of different tectonic settings. Provides background in structural geology. Emphasis in the laboratory on examples and techniques that are broadly applicable in geology, especially the interpretation of geologic maps. Special fees apply. ***Prerequisites: GEOS F322 or concurrent enrollment in GEOS F214; PHYS F103X or PHYS F211X.*** (3+3)

GEOS F315 W Paleobiology and Paleontology (n)
4 Credits Offered Fall
Survey of the history of life on Earth as represented in the fossil record. Contribution of paleontology to the study of evolution, past environments and paleogeography; biostratigraphically important invertebrate fossil groups and their temporal ranges; evolution of terrestrial flora and fauna; current issues in paleontology. Emphasis on recognition of major fossil groups and paleontological problem solving in labs and assignments. Special fees apply. ***Prerequisites: BIOL F103X or BIOL F115X or GEOS F112X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** (3+3)

GEOS F322 Stratigraphy and Sedimentation (n)
4 Credits Offered Fall
Analysis and interpretation of sedimentary rocks in stratigraphic successions based on comparison with features found in modern depositional environments. Application of the principles of facies analysis and litho-, bio-, sequence, and chronostratigraphy in surface and subsurface examples. Emphasis in the laboratory on interpretation of depositional environments based on lithofacies, biofacies and sedimentary structures and correlation of stratigraphic sequences using surface and subsurface data. Special fees apply. ***Prerequisites: GEOS F101X or GE F261; GEOS F112X.*** (3+3)

GEOS F332 Ore Deposits and Structure
3 Credits Offered Spring
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. Special fees apply. ***Prerequisites: GEOS F262 or permission of instructor.*** (1+6)

GEOS F351 W Field Geology (n)
8 Credits Offered Summer Odd-numbered Years; As Demand Warrants
Practical experience in a variety of field settings collecting and presenting basic geologic field data. Includes field mapping of stratigraphic and structural problems using topographic maps, airborne and satellite images. Students will prepare geologic maps in a variety of tectonic and lithologic settings and develop written reports detailing the geologic history for several study areas. Exercises in collection and use of geophysical data as an aid to geologic mapping. Hiking off trails in a variety of terrains with up to 2,000 vertical feet of elevation gain per day. Course fees cover transportation and subsistence outside of Fairbanks. Entrance by preregistration only; apply through the department. Early registration recommended. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; GEOS F214; GEOS F225; GEOS F314; GEOS F322; junior standing; permission of instructor.*** (8+0)

GEOS F370 Sedimentary and Structural Geology for Petroleum Engineers (n)
4 Credits Offered Fall Odd-numbered Years
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. Special fees apply. ***Prerequisites: GEOS F101X or GE F261.*** Cross-listed with PETE F370. (3+3)

GEOS F401 Invertebrate Paleontology (n)
3 Credits Offered Fall Even-numbered Years
Study of invertebrate phyla with extensive geologic records. Emphasis on principles of biostratigraphy and paleoecology, application to geologic problems and case studies from Alaska. Laboratory study of fossil assemblages with emphasis on stratigraphically significant groups. Designed to complement GEOS F322. Special fees apply. ***Prerequisites: GEOS F315 or permission of instructor. Recommended: GEOS F322.*** (2+3)

GEOS F406 Volcanology
3 Credits Offered Spring Even-numbered Years
Physical processes of volcanism. Topics include physical properties of magmas, eruption mechanisms, deposition mechanism and volcanic hazards. Emphasis on explosive volcanism and its products, pyroclastic rocks. Geochemistry and petrology will not be emphasized in this course. ***Prerequisites: Permission of instructor.*** (3+0)

GEOS F408 Photogeology (n)
2 Credits Offered Spring Even-numbered Years
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. Special fees apply. ***Prerequisites: GEOS F304 or permission of instructor.*** (1+3)

GEOS F416 Applied Geophysics (n)
3 Credits Offered Spring Even-numbered Years
Introduction to the theory and practice of geophysical techniques and the interpretation and modeling of geophysical data. Topics include: gravity, GPS, magnetic seismic, and electrical methods and their application to regional and local geophysical exploration in Alaska. Special fees apply. ***Prerequisites: GEOS F418 or permission of instructor.*** (2+3)

GEOS F417 Introduction to Geochemistry
3 Credits Offered Fall
Application of chemical principles and elemental/isotopic behavior to the study of the Earth. Topics include: aqueous geochemistry, high-temperature mineral-elemental chemistry, isotopic chemistry, kinetics and thermochemistry. ***Prerequisites: CHEM F106X; GEOS F322 or CHEM F202.*** Stacked with GEOS F618. (3+0)

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GEOS F418 Basic Geophysics
3 Credits Offered Fall
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. ***Prerequisites: MATH F200X; PHYS F104X; or permission of instructor.*** (3+0)

GEOS F421 Sedimentology
3 Credits Offered Spring Odd-numbered Years
Origin, classification, composition, transportation, deposition and diagenesis of sediments. Emphasis on sedimentary processes, sedimentary petrology and interpretation of ancient sedimentary rocks. Laboratory covers identification and description of hand specimens as well as techniques of textural and compositional analysis. Special fees apply. ***Prerequisites: GEOS F213 or permission of instructor.*** (2+3)

GEOS F422 Geoscience Applications of Remote Sensing (n)
3 Credits Offered Fall
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 photograph. ***Prerequisites: PHYS F104X or PHYS F212X; junior standing; or permission of instructor.*** (2+3)

GEOS F428 Elementary Scanning Electron Microscopy
1 Credit Offered Spring
Basic theory and operating procedures for scanning electron microscopy. Includes sample preparation, imaging and qualitative elemental analysis. Biological and nonbiological applications are covered. Graded Pass/Fail. Special fees apply. ***Prerequisites: Junior standing or permission of instructor.*** Stacked with GEOS F628. (0.5+1.5)

GEOS F430 Statistics and Data Analysis in Geology
3 Credits Offered Spring
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: GEOS F225; STAT F200X.*** (3+0)

GEOS F434 Remote Sensing of the Cryosphere (n)
4 Credits Offered Spring Odd-numbered Years
Survey of remote sensing methods for mapping and monitoring the various components of the cryosphere. Focus is on the application of optical and microwave satellite data for the study of snow, lake ice and frozen ground. Demonstration and use of field techniques and image analysis software. ***Prerequisites: GEOS F422 or equivalent.*** Stacked with GEOS F634. (3+3)

GEOS F438 Basin Analysis
3 Credits Offered Spring Odd-numbered Years
Examines sedimentary basins as a record of subsidence. Review and discuss techniques used to image basin stratigraphy as well as the quantitative techniques which can be used to recover basin history. ***Prerequisites: GEOS F322 or GEOS F370. Recommended: GEOS F314; GEOS F416; GEOS F418.*** Stacked with GEOS F638. (3+0)

GEOS F452 Quaternary Seminar
3 Credits Offered As Demand Warrants
Learning about the Quaternary Period (relatively recent past — spanning the past two million years) in order to gain a better understanding of the landscape, biota and climate of the present day. Quaternary studies are concerned with the historical dimension of the natural sciences. This seminar will range widely over diverse interdisciplinary subjects of Quaternary interest, such as paleoclimatology, paleobiogeography, vertebrate paleontology and sedimentology. ***Prerequisites: GEOS F304; GEOS F315; GEOS F322.*** Cross-listed with ANTH F451. Stacked with GEOS F651; ANTH F651. (3+0)

GEOS F453 Palynology and Paleopalynology (n)
4 Credits Offered Fall Even-numbered Years
Survey of the evolutionary record of palynomorphs and their uses in biostratigraphy and paleoclimatology. Focus on evolution of palynomorphs from Precambrian to the present and concurrent evolutionary developments of producing plants. Use of Quaternary palynofloras in reconstructing global climates. Labs involve collection of herbarium specimens, processing of fossil palynomorphs, study of type slides and a survey of palynofloras from each geologic period. Special fees apply. ***Prerequisites: BIOL F115X or GEOS F315; senior standing.*** Stacked with GEOS F653. (3+3)

GEOS F456 Paleopedology
3 Credits Offered Fall Even-numbered Years
A survey course focusing on the recognition and use of paleosols (fossil soils) as paleoenvironmental indicators, stratigraphic markers and in paleogeographic reconstructions from Precambrian to Holocene. Examination of theories of soil formation, major soil processes and approaches to soil classification. Review of geochemical, mineralogical, morphological and micromorphological techniques. Use of paleosols for paleolandscape evolution and basin analysis. Geological, tectonic, archaeological and environmental applications of paleosols are discussed. ***Prerequisites: GEOS F322 or GEOG F111 or NRM F380 or permission of instructor.*** Stacked with GEOS F656. (3+0)

GEOS F458 Geoscience Applications of GPS and GIS (n)
3 Credits Offered Spring
Aspects of GPS data collection, including hands-on experience with different GPS units, differential GPS methods, real-time and post processing corrections. Concepts of Geographic Information Systems (GIS). Working with real-world data and software tools such as Excel spreadsheets and ArcGIS, students will learn to organize and integrate multisource data, analyze spatial relationships and generate maps for digital and print media. Course is not available for audit. ***Prerequisites: GEOS F225 or permission of instructor. Recommended: MATH F107X; MATH F200X.*** Stacked with GEOS F658. (2+3)

GEOS F463 O Glacial and Periglacial Geology (n)
4 Credits Offered Fall Odd-numbered Years
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. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; GEOS F304.*** Stacked with GEOS F663. (3+3)

GEOS F465 Geoarchaeology
3 Credits Offered As Demand Warrants
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. Special fees apply. ***Prerequisites: GEOS F101X; an introductory course in archaeology; or permission of instructor.*** Cross-listed with ANTH F465. (3+0)

GEOS F475 W,O Presentation Techniques in the Geosciences
2 Credits Offered Spring
Instruction and practice in oral and written communication skills specifically related to the geosciences. Oral and written presentation of abstracts, resumes, proposals and reports required. Works critically analyzed by instructor(s) and peers for both geoscience content and communication effectiveness. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; senior standing.*** Stacked with GEOS F675. (1+3)

GEOS F482 Geology Seminar
1 Credit
A weekly seminar series on a geologic theme of current interest for a complete semester. Stacked with GEOS F682. (1+0)

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GEOS F486 **Vertebrate Paleontology** (n)
3 Credits Offered Spring Odd-numbered Years
The study of vertebrate evolution through geologic time. Covers the temporal range, diversity and systematics of major vertebrate groups as documented in the fossil record, with an emphasis on current problems in vertebrate evolutionary pattern and process. Labs emphasize comparative morphology and identification of major vertebrate groups. ***Prerequisites: BIOL F310 or BIOL F317 or GEOS F315 or permission of instructor.*** Cross-listed with BIOL F486. Stacked with GEOS F686; BIOL F686. (2+3)

GEOS F488 **Undergraduate Research**
1-3 Credits
Advanced research topics from outside the usual undergraduate requirements. ***Prerequisites: Permission of instructor. Recommended: A substantial level of technical/scientific background.*** (1-3+0)

GEOS F600 **Introduction to X-ray Spectrometry**
3 Credits Offered Fall
Theory of X-ray spectrometry, qualitative and quantitative elemental analysis. Mechanics of electron, microprobe and X-ray fluorescence analysis. Applicable to geologic, materials science and biologic samples. Required for use of the microprobe at UAF. Special fees apply. ***Prerequisites: PHYS F212X; STAT F300; GEOS F417; graduate standing in the sciences or engineering; or permission of instructor.*** (2+3)

GEOS F602 **Geophysical Fields**
3 Credits Offered Spring Odd-numbered Years
Introduction to the application of potential theory and its associated mathematical tools to fields of geophysical interest, namely gravity, magnetics, and heat flow. Emphasis will be placed on methods and tools for solving a variety of problems in global and regional geophysics, and the geophysical interpretation of solutions. ***Prerequisites: MATH F421 and MATH F422 and permission of instructor; or graduate standing.*** (3+0)

GEOS F603 **Advanced Field Mapping**
1-2 Credits Offered As Demand Warrants
Practical experience in advanced field mapping techniques with accompanying instruction in the regional and local geology of the study area. Special fees apply. ***Prerequisites: GEOS F351.*** (0+1-3+3)

GEOS F604 **Intermediate Seismology**
3 Credits Offered Spring Even-numbered Years
Sources of ground motion including focal mechanisms, magnitude and propagation of waves within the earth. Measurement of seismic data by analog and digital techniques and subsequent treatment of seismic data by various techniques including inversion. (3+0)

GEOS F605 **Geochronology**
3 Credits Offered Fall Even-numbered Years
Application of the most commonly used radiometric dating methods to geologic problems. Fundamentals of the K-Ar, Rb-Sr, fission-track, U-Th-Pb and C methods. Laboratory training in K-Ar and fission-track dating techniques. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

GEOS F606 **Volcanology**
3 Credits Offered Fall Odd-numbered Years
Physical processes of volcanism. Topics include physical properties of magmas, eruption mechanisms, deposition mechanism and volcanic hazards. Emphasis on explosive volcanism and its products, pyroclastic rocks. Geochemistry and petrology will not be emphasized in this course. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

GEOS F611 **Advanced Structural Geology and Tectonics**
3 Credits Offered Fall Even-numbered Years
An advanced course providing an in-depth treatment of specific aspects of structural geology and tectonics. Topics to be considered in different semesters include tectonics and sedimentation, mountain belts of the world, structural analysis, structural geology of a specific tectonic setting (such as fold-and-thrust belts or rifts), (E) active tectonics and topography, (F) structural interpretation of seismic reflection data, and (G) other special topics in structural geology or tectonics. ***Prerequisites: GEOS F314; graduate standing; or permission of instructor. Note: Course may be repeated for different topics up to three times for credit.*** (3+0)

GEOS F612 **Geologic Evolution of Alaska**
3 Credits Offered Fall Even-numbered Years
An overview of the geological provinces of Alaska and neighboring continental and oceanic regions. Emphasis will be on the geologic history and tectonic evolution of Alaska. ***Prerequisites: GEOS F314 and GEOS F322; OR graduate standing.*** (3+0)

GEOS F613 **Global Tectonics**
3 Credits Offered Fall Odd-numbered Years
An advanced course dealing with tectonic theory. Emphasis on plate tectonics with discussions of the evidence supporting the plate hypothesis and the interaction of plates both past and present. ***Prerequisites: GEOS F314 and GEOS F322; OR graduate standing.*** (3+0)

GEOS F614 **Ice Physics**
3 Credits Offered Spring Even-numbered Years
A survey of the physics of ice. Topics will include the crystal structure and properties of ice, high pressure phases, hydrogen bonding, mechanical, thermal, electrical and acoustic properties, nucleation and growth, and optical and surface properties (adhesion, friction). ***Prerequisites: MATH F421 and MATH F422 and permission of instructor; OR graduate standing.*** Cross-listed with PHYS F614. (3+0)

GEOS F615 **Sea Ice**
3 Credits Offered Fall Even-numbered Years
A study of sea ice in the natural environment including sea ice properties and processes on the micro-scale and the macro-scale, freezing processes and sea ice growth, ice decay and ice dynamics. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

GEOS F616 **Permafrost**
3 Credits Offered Spring Odd-numbered Years
Study of the occurrence, thickness, environmental problems, and mass and energy transport of permafrost, including soil and ice interaction, freezing and thawing processes, and mechanical and electrical properties and processes. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

GEOS F617 **Glaciers**
3 Credits Offered Fall Odd-numbered Years
The mechanisms responsible for the existence, motion and variations of present-day glaciers and ice sheets, the paleoclimate information they contain and their role in engineering hydrology. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

GEOS F618 **Introduction to Geochemistry**
3 Credits Offered Fall
Application of chemical principles and elemental/isotopic behavior to study of the Earth. Topics include: aqueous geochemistry, high-temperature mineral-elemental chemistry, isotopic chemistry, kinetics and thermochemistry. ***Prerequisites: CHEM F106X; GEOS F322 OR CHEM F331 and CHEM F332; graduate standing.*** Stacked with GEOS F417. (3+0)

GEOS F619 **Advanced X-ray Spectroscopy**
2 Credits Offered As Demand Warrants
Advanced X-ray techniques. Topics include preparation of unusual samples, quantification methods, x-ray mapping and classification, and error analysis. Each student will develop a project to explore the the limits of x-ray analysis. Note: Course may be repeated three times for credit. Special fees apply. ***Prerequisites: GEOS F600 or permission of instructor.*** (1+3)

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GEOS F620 Geodynamics
3 Credits Offered Fall Even-numbered Years
Applications of continuum mechanics and heat flow theory to geophysical, geologic and glaciological problems. Topics such as postglacial rebound, non-Newtonian fluid flow, thermal convection, stress-relaxation and the rheology of earth materials will be discussed. ***Prerequisites: MATH F421 and MATH F422 and permission of instructor; OR graduate standing.*** (3+0)

GEOS F621 Advanced Petrology
4 Credits Offered As Demand Warrants
A detailed treatment of various aspects of petrology. Specific topics to be considered in different semesters include metamorphic petrology, igneous petrology, and igneous and metamorphic petrography. Each time the course is offered, only one topic will be presented. Special fees apply. ***Prerequisites: Graduate standing; permission of instructor.*** (3+3)

GEOS F622 Digital Image Processing in the Geosciences
3 Credits Offered Fall Odd-numbered Years
Image processing and analysis techniques as they relate to remote sensing and other applications in the geosciences. Apart from lectures and demonstrations, the advantages and drawbacks of different methods and approaches and their applicability to geoscience problems will be evaluated through exercises and a course project. (3+0)

GEOS F628 Elementary Scanning Electron Microscopy
1 Credit Offered Spring
Basic theory and operating procedures for scanning electron microscopy. Includes sample preparation, imaging and qualitative elemental analysis. Biological and non-biological applications are covered. Graded Pass/Fail. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with GEOS F428. (0.5+1.5)

GEOS F629 Geologic Hazards and Natural Disasters
3 Credits Offered Spring Odd-numbered Years
Examination of hazardous geologic processes which produce natural disasters, including volcanism, tectonism, flooding, etc. Includes scientific approaches to evaluating the magnitude and probability of risk from future hazardous events. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

GEOS F633 Environmental Geochemistry
3 Credits Offered Spring Even-numbered Years
Advanced topics and methods in chemistry of aquatic and soil environments. Detailed treatment of the thermodynamic, kinetic and structural principles involved in the description and modeling of low-temperature aqueous geochemical systems. Particular emphasis will be placed on heterogenous interactions, including dissolution/precipitation, sorption and microbial processes, involved in the partitioning, transformation and transport of chemical species in the environment. ***Prerequisites: ENVE F641 or GEOS F618 or permission of instructor.*** Cross-listed with CHEM F609. (3+0)

GEOS F634 Remote Sensing of the Cryosphere
4 Credits Offered Spring Odd-numbered Years
Survey of remote sensing methods for mapping and monitoring the various components of the cryosphere. Focus is on the application of optical and microwave satellite data for the study of snow, lake ice and frozen ground. Demonstration and use of field techniques and image analysis software. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with GEOS F434. (3+3)

GEOS F635 Advanced Economic Geology
1-4 Credits Offered As Demand Warrants
An advanced course providing an in-depth treatment of various aspects of economic geology. Specific topics will be considered in different semesters. They include ore microscopy, industrial minerals, economics of minerals, geochemistry of ore deposits, modern fossil fuel exploration and detailed study of particular ore deposit type. Each time the course is offered, only one topic will be presented. May be repeated for credit. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor.*** (1-4+0-3)

GEOS F637 Rock-Forming Minerals
4 Credits Offered Spring Odd-numbered Years
Examination of the rock-forming minerals; their structure and composition. Application of mineral data to problems in geochemistry, petrology and ore deposits. Laboratory involves analysis of minerals by various analytical techniques. Special fees apply. ***Prerequisites: GEOS F417 and permission of instructor; OR graduate standing.*** (3+3)

GEOS F638 Basin Analysis
3 Credits Offered Spring Odd-numbered Years
Examines sedimentary basins as a record of subsidence. Review and discuss techniques used to image basin stratigraphy as well as the quantitative techniques which can be used to recover basin history. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with GEOS F438. (3+0)

GEOS F639 InSar and its Applications
3 Credits Offered As Demand Warrants
Introduction to the concepts of repeat-pass spaceborne SAR interferometry. Practical use of the technique to derive displacements of the solid earth, glaciers and ice sheets to a precision of a few centimeters and accurate digital elevation models of the earth's surface. ***Prerequisites: Basic remote sensing course or permission of instructor.*** Cross-listed with PHYS F639. (2+2)

GEOS F640 Petrology of Carbonate Rocks
4 Credits Offered Spring Even-numbered Years
Origin, depositional environments, diagenesis and classification of limestones, dolostones and related rocks. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor.*** (3+3)

GEOS F643 Sandstone Depositional Environments
3 Credits Offered Fall Even-numbered Years
Sedimentary depositional environments treating the hydrodynamics, sediment dispersal patterns and preservation potential of modern terrigenous clastic depositional environments and criteria for recognizing their ancient counterparts in the geologic record. Special fees apply. ***Prerequisites: GEOS F322 and GEOS F421; OR graduate standing.*** (3+0)

GEOS F647 Advanced Sedimentology and Stratigraphy
3 Credits Offered Spring Even-numbered Years
Various topics in sedimentology and stratigraphy. Specific offerings to be presented at various times include sequence stratigraphy and sea-level analysis, sandstone petrology, thermal maturation and geohistory analysis of sediments. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

GEOS F651 Quaternary Seminar
3 Credits Offered As Demand Warrants
Seminar about the Quaternary Period (relatively recent past — spanning the past two million years) in order to gain a better understanding of the landscape, biota and climate of the present day. Quaternary studies are concerned with the historical dimension of the natural sciences. This seminar will range widely over diverse interdisciplinary subjects of Quaternary interest, such as paleoclimatology, paleobiogeography, vertebrate paleontology and sedimentology. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with ANTH F651. Stacked with ANTH F451; GEOS F452. (3+0)

GEOS F653 Palynology and Paleopalynology
4 Credits Offered Fall Even-numbered Years
Survey of the evolutionary record of palynomorphs and their uses in biostratigraphy and paleoclimatology. Focus on evolution of palynomorphs from Precambrian to the present and concurrent evolutionary developments of producing plants. Use of Quaternary palynofloras in reconstructing global climates. Labs involve collection of herbarium specimens, processing of fossil palynomorphs, study of type slides and a survey of palynofloras from each geologic period. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with GEOS F453. (3+3)

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GEOS F654 **Visible and Infrared Remote Sensing**
3 Credits Offered Spring Even-numbered Years
In-depth coverage of the principles, physics, sensor technology, processing and applications of remote sensing in the visible and infrared region, including but not limited to electromagnetic spectrum, radiation laws, spectral signatures, atmospheric interactions, temperature emissivity estimation, analysis and feature extraction from data sets. The laboratory part of the course will provide hands-on experience on special processing techniques, and the possibility of using these techniques for a student-defined term project in areas of geology, volcanology, glaciology, hydrology, environmental sciences, etc. ***Prerequisites: GEOS F422 or equivalent.*** (3+0)

GEOS F655 **Tectonic Geodesy**
3 Credits Offered Spring Even-numbered Years
Introduction to modern space geodetic methods and details their application to the study of active earth processes such as plate tectonics, fault mechanics and volcanology. Includes space geodesy methods such as global positioning system, as standard geophysical tools for the study of earthquakes, active tectonics and volcanology. ***Prerequisites: MATH F314; MATH F421; MATH F422; graduate standing; or permission of instructor.*** (3+0)

GEOS F656 **Paleopedology**
3 Credits Offered Fall Even-numbered Years
A survey course focusing on the recognition and use of paleosols (fossil fuels) as paleoenvironmental indicators, stratigraphic markers and in paleogeographic reconstructions from Precambrian to Holocene. Examination of theories of soil formation, major soil processes and approaches to soil classification. Review of geochemical, mineralogical, morphological and micromorphological techniques. Use of paleosols for paleolandscape evolution and basin analysis. Geological, tectonic, archaeological and environmental applications of paleosols are discussed. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with GEOS F456. (3+0)

GEOS F657 **Microwave Remote Sensing**
3 Credits Offered Spring Even-numbered Years
The principles and applications of active and passive microwave remote sensing with emphasis on spaceborne remote sensing of the Earth's atmosphere, land and oceans. The laboratory section will provide hands-on experience on special processing techniques, and the possibility of using these techniques for a student-defined term project in areas of geology, volcanology, glaciology, hydrology, environmental sciences, etc. ***Prerequisites: GEOS F422 or equivalent.*** (2+2)

GEOS F658 **Geoscience Applications for GPS and GIS**
3 Credits Offered Spring
Aspects of GPS data collection, including hands-on experience with different GPS units, differential GPS methods, real-time and post processing corrections. Concepts of Geographic Information Systems (GIS). Working with real-world data and software tools such as Excel spreadsheets and ArcGIS, students will learn to organize and integrate multisource data, analyze spatial relationships and generate maps for digital and print media. Course is not available for audit. ***Prerequisites: GEOS F225 or permission of instructor. Recommended: MATH F107X and MATH F200X.*** Stacked with GEOS F458. (2+3)

GEOS F663 **Glacial and Periglacial Geology**
4 Credits Offered Fall Odd-numbered Years
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. Special fees apply. ***Prerequisites: GEOS F304 or graduate standing.*** Stacked with GEOS F463. (3+3)

GEOS F670 **Selected Topics in Volcanology**
1-3 Credits Offered Fall
Survey course in subjects relating to volcanology. Possible subjects include, but are not limited to, eruption dynamics, geophysics of eruptions, volatiles in volcanic systems, modeling volcanic systems. May be repeated for credit. ***Prerequisites: GEOS F621 and GEOS F417; OR graduate standing.*** (1-3+0)

GEOS F671 **Volcano Seismology**
3 Credits Offered Spring Odd-numbered Years
Survey of seismic behavior of volcanoes. Topics include instrumentation, terminology, swarms and their attributes, high-frequency events, volcanic explosions, volcanic tremor, attenuation and velocity structure, cycles of activity, eruption forecasting, detection of magma chambers, case studies and selected topics. Oral and written student presentations will be required. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

GEOS F675 **Presentation Techniques in the Geosciences**
2 Credits Offered Spring
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. ***Prerequisites: Graduate standing.*** Stacked with GEOS F475. (1+3)

GEOS F676 **Remote Sensing of Volcanic Eruptions**
3 Credits Offered As Demand Warrants
Focuses on the use of satellite images to detect, monitor and mitigate volcanic hazards, and to understand eruption processes. Thermal anomalies, volcanic clouds and surface morphological features will be discussed in the lecture and test cases analyzed in the laboratory. Satellite data include GOES, AVHRR, MODIS, ASTER, Landsat and SAR. Course may be repeated twice for credit. ***Recommended: GEOS F422 or equivalent Remote Sensing Class or permission of instructor.*** (2+3)

GEOS F682 **Geology Seminar**
1 Credit
A weekly seminar series on a geologic theme of current interest for a complete semester. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with GEOS F482. (1+0)

GEOS F686 **Vertebrate Paleontology**
3 Credits Offered Spring Odd-numbered Years
The study of vertebrate evolution through geologic time. Covers the temporal range, diversity and systematics of major vertebrate groups as documented in the fossil record, with an emphasis on current problems in vertebrate evolutionary pattern and process. Labs emphasize comparative morphology and identification of major vertebrate groups. ***Prerequisites: BIOL F310 or BIOL F317 or GEOS F315 or permission of instructor.*** Cross-listed with BIOL F486; GEOS F486. Stacked with BIOL F686. (2+3)

GERMAN

GER F101 **Elementary German I** (h)
5 Credits
Introduction to the German 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 audiovisual materials. (5+0)

GER F102 **Elementary German II** (h)
5 Credits
Introduction to the German 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 audiovisual materials. ***Prerequisites: GER F101 or equivalent.*** (5+0)

GER F103 **Conversational German I** (h)
3 Credits
Oral skills improvement. Includes group work, presentations, skits, discussions and vocabulary to improve speaking on specific topics. Graded Pass/

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Fail. ***Prerequisites: GER F102 or equivalent or permission of instructor. Does not satisfy core curriculum or foreign language major requirements.*** (3+0)

GER F201 Intermediate German I (h)
3 Credits
Continuation of GER F102. Increasing emphasis on reading ability and cultural material. Conducted in German. ***Prerequisites: GER F102 or equivalent.*** (3+0)

GER F202 Intermediate German II (h)
3 Credits
Continuation of GER F201. Increasing emphasis on reading ability and cultural material. Conducted in German. ***Prerequisites: GER F201 or equivalent.*** (3+0)

GER F203 Conversational German II (h)
3 Credits
Oral skills improvement. Includes group work, presentations, skits, discussions and vocabulary to improve speaking on specific topics. Graded Pass/Fail. ***Prerequisites: GER F102 or equivalent or permission of instructor. Does not satisfy core curriculum or foreign language major requirements.*** (3+0)

GER F301 W,O Advanced German (h)
3 Credits
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in German. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; GER F202 or equivalent.*** (3+0)

GER F302 W,O Advanced German (h)
3 Credits
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in German. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; GER F301 or equivalent.*** (3+0)

GER F431 W Studies in the Culture of the German Speaking World (h)
3 Credits Offered Spring Even-numbered Years
Study of the cultures of the German-speaking world. Students may repeat course for credit if topic varies. Note: Course may be repeated for credit if topic varies. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; GER F301 or equivalent; junior standing; or permission of instructor.*** (3+0)

GER F432 W Studies of German Literature (h)
3 Credits Offered Spring Odd-numbered Years
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. Student may repeat course for credit when topics vary. Note: Course may be repeated for credit if topic varies. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; GER F302 or equivalent; junior standing; or permission of instructor.*** (3+0)

GER F482 Selected Topics in German (h)
3 Credits
Intensive course focusing on topics not covered in GER F431 or GER F432. Course may be repeated for credit if topic varies. ***Prerequisites: GER F302 or equivalent; junior standing; or permission of instructor.*** (3+0)

GER F488 Individual Study: Senior Project
3 Credits
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 sixth 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.*** (3+0)

HEALTH

HLTH F100 Medical Terminology
3 Credits
Study of medical terminology including analysis and origin of word roots, prefixes and suffixes. Understanding the word components, students will be able to build, spell and define medical words. Content will be presented by body systems focusing on terms for anatomy, diagnostic, laboratory and medical specialties. Includes use of medical dictionary, word pronunciation and abbreviations. Designed for health care professionals. (3+0)

HLTH F101 CNR — Normal Nutrition Counseling
1 Credit
First in a series of four courses examines basic applied nutrition and counseling techniques. Counseling opportunities are provided to allow students to practice skills learned in the classroom. (1+0)

HLTH F102 CNR — Therapeutic Nutrition Counseling
1 Credit
Second in a series of four courses examines basic therapeutic knowledge and nutrition counseling techniques. Counseling opportunities are provided to allow students to practice skills learned in the classroom. Offered at the Kuskokwim Campus only. ***Prerequisites: HLTH F101 or permission of instructor.*** (1+1)

HLTH F103 CNR — Nutrition Education and Food Preservation
1 Credit
Third in a series of four courses examines methods for planning and presenting group nutrition education talks and food preservation methods. ***Prerequisites: HLTH F102 or permission of instructor.*** (1+1)

HLTH F104 CNR — Community Resources and Problem Solving
1 Credit
Fourth in a series of four courses examines community nutrition resources and methods for community nutrition problem-solving. ***Prerequisites: HLTH F103 or permission of instructor.*** (1+1)

HLTH F105 Introduction to Health Careers
2 Credits
Introduction to health careers and the psychology of patient care. Roles and responsibilities of different members/functional units of the health care team; information on related job and educational opportunities; needs and roles of health providers in rural and urban Alaska settings. ***Prerequisites: High school graduation or GED or permission of program coordinator.*** (2+0)

HLTH F106 Human Behavior in Health Care (s)
3 Credits
Discussion of general concepts in human behavior and the specialized psychological issues when dealing with patients and loved ones in health care settings. Students perform self-evaluation and survey other cultures to allow examination of perceptions, individual biases, beliefs and their impacts on behavior. (3+0)

HLTH F107 Nurse Aide Training
9 Credits
Teaches basic nursing skills necessary to assist the nurse and be an efficient health care team member. Presents positive communication skills while providing care of residents' physical and emotional needs in a variety of health care settings. Content satisfies the theory and clinical skills needed to take the State of Alaska exam to become a Certified Nurse Aide. ***Prerequisites: High school graduation or GED; 10th grade reading level by exam; or permission of instructor. Student must be in good physical condition and have the following immunizations: Hepatitis B series, two MMRs, a PPD within 3 months of the clinical component of class.*** (5+8)

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HLTH F110 Professional Skills for the Workplace
2 Credits
Presents skills to ensure success for the professional secretary, receptionist, medical worker and others. Includes interview skills, business manners, customer service and dressing for success. (2+0)

HLTH F111 Personal Care Attendant Training
4 Credits
Designed to train personal care attendants in basic care necessary to assist nurses and to be efficient health care team members. It qualifies students for state certificate of completion as personal care attendants. Eighty-eight (88) hours of class, lab and clinical practice is included. Requires criminal background check. ***Prerequisites: Proof of immunity to chicken pox, MMR and Hepatitis B; negative PPD within the last year; high school graduation or GED or 10th grade reading level by exam. Students must be in good physical condition. Co-requisites: Health care provider CPR and First Aid card.*** (2.5+3)

HLTH F113 Personal Care Attendant to Nursing Assistant Bridge
5 Credits Offered as Demand Warrants
Trains personal care attendants to become Certified Nurse Assistants. Students build upon basic PCA skills and experience. Provides the additional classroom, laboratory and clinical hours necessary to sit for the state Certified Nurse Assistant exam. ***Prerequisites: High school graduation or GED; a 10th grade reading level by exam; HLTH F111 or on the job agency training plus two years experience and instructor approval. Students must be in good physical condition, have current immunizations, and health care provider CPR card.*** (3+4)

HLTH F114 Fundamentals of Anatomy and Physiology
4 Credits
Provides a basic understanding of human anatomy and physiology. Recommended for individuals interested in health careers or students desiring an introduction to anatomy and physiology prior to taking in-depth course work in this field. ***Recommended: HLTH F100; high school biology and chemistry.*** (3+3)

HLTH F116 Mathematics in Health Care
3 Credits
Practical application of mathematics in health care, including arithmetic review, percentages, interest, ratio, proportion, dimensional analysis, metric system, medication calculation, graphs, charts and measurement instruments. ***Prerequisites: DEVM F050 or placement in DEVM F060 or higher.*** (3+0)

HLTH F118 Medical Law and Ethics
2 Credits
In-depth coverage of legal and ethical issues encountered in health care settings. Students will gain a practical knowledge of legal and ethical principles and application of these principles in health care settings. (2+0)

HLTH F120 Industrial First Aid
1 Credit
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. Graded Pass/Fail. (1+0)

HLTH F122 First Aid and CPR
1 Credit
Provides instruction on emergency first aid theory and techniques. Students acquire knowledge and skills necessary for dealing with emergencies in a medical/dental office and other clinical settings. Includes First Aid Certification and health care provider (adult, child and infant) CPR Certification. Graded Pass/Fail. (0.5+1)

HLTH F130 Medical Office Technology
3 Credits Offered Spring
Introduces current and potential health care workers to computers in the medical office. Will study medical office management software and electronic health record systems. Includes discussion of computer hardware and software, working with operating systems, keyboarding, word processing, spreadsheets, presentation creation and formatting, and database concepts. (3+0)

HLTH F132 Administrative Procedures I
2 Credits
Administrative responsibilities performed by medical/dental assistants and other health care providers in outpatient facilities. Includes duties of the office assistant, receptionist or secretary. Focus on reception, telephone procedures, public relations and professionalism. ***Prerequisites: High school graduation or GED or permission of instructor.*** (2+0)

HLTH F135 ICD-9 Coding
3 Credits
In-depth study of the International Classification of Diseases (ICD), designed for classification of patient morbidity and mortality information for statistical purposes and for the indexing of health records for the health care profession. ***Prerequisites: HLTH F112 OR both HLTH F100 and HLTH F114.*** (3+0)

HLTH F142 Clinical Procedures I
4 Credits
Introduction to the theoretical basis and performance competencies for the clinical duties performed by medical assistants in outpatient facilities. Includes care of patients in the examining room, use and care of medical instruments and supplies, assisting physicians with clinical procedures, administering medications and introduction to clinical laboratory procedures. Special fees apply. ***Prerequisites: HLTH F100; HLTH F116. Co-requisites: HLTH F114 or BIOL F100X or permission of program coordinator.*** (3+2)

HLTH F203 Science of Nutrition
3 Credits
Introduction to the principles of nutrition and its relationship to the life cycle. Focus on the importance nutrition plays in personal health and how to objectively evaluate nutritional intake using scientifically sound resources. Also available via Independent Learning. (3+0)

HLTH F208 Human Diseases
3 Credits
Introduction to the study of human diseases. Pathogenesis, etiology and predisposing factors will be examined. The most common diseases and disorders of each body system are presented along with a review of the pertinent anatomy and physiology. Includes the effects of aging on the system and the relationship of aging to disease. ***Prerequisites: HLTH F100 or permission of instructor.*** (3+0)

HLTH F234 Administrative Procedures II
4 Credits
Office management and financial procedures used in medical offices. Includes medical financial recordkeeping systems and computerized office management systems. Includes ICD-9, CPT coding system, patient insurance billing/reimbursement procedures, the demonstration of computational skills in accounts payable/accounts receivable, and office management in the health care setting. ***Prerequisites: CIOS F150; HLTH F100; HLTH F132; test scores sufficient for placement in ENGL F111X; or permission of instructor.*** (3+2)

HLTH F235 Medical Coding
4 Credits
The current procedural terminology (CPT) and the international classification of diseases (ICD) systems used in the medical setting. Examines the medical and legal uses of the CPT and ICT code systems in inpatient and outpatient medical settings, urgent care settings, billing departments and ancillary medical professions. Prepares students to take national certification exams. ***Recommended: HLTH F100; HLTH F132; HLTH F208; HLTH F234.*** (4+0)

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HLTH F236 Outpatient Health Care Reimbursement
3 Credits
Outpatient reimbursement issues including documentation, insurance carriers, schedules and payment profiles. Collection strategies and legal issues, and the importance of educating the patient to the financial policies of the practice. ***Prerequisites: HLTH F132; concurrent HLTH F234; or permission of instructor.*** (3+0)

HLTH F237 Inpatient Health Care Reimbursement
3 Credits
Rules and regulations governing the reimbursement of inpatient and hospital coding. Includes HIPPA regulations, Medicare, Medicaid, third party billing, and the legal and ethical guidelines of inpatient billing. ***Prerequisites: HLTH F132; HLTH F135; HLTH F234; or permission of instructor.*** (3+0)

HLTH F244 Clinical Procedures II
4 Credits Offered As Demand Warrants
Theoretical basis and performance competencies for the clinical duties performed by medical assistants in outpatient facilities. Includes urinalysis, electrocardiograph, subcutaneous and intramuscular injections, routine laboratory procedures, venipuncture, emergencies and assisting with specialty examinations. Special fees apply. ***Prerequisites: HLTH F100; HLTH F114 or BIOL F100X; HLTH F116; HLTH F122; HLTH F142.*** (3+2)

HLTH F245 Phlebotomy Principles and Methods
3 Credits
Proper blood collection and handling techniques, function of the circulatory system, quality control in the medical laboratory, universal precautions, asepsis and disinfection, OSHA regulations, basic laboratory testing and microbiology concepts will be addressed. Completion of this course, followed by completion of the phlebotomy externship, HLTH F265, prepares students for the national ASCP phlebotomy technician certification exam. Special fees apply. ***Prerequisites: Documentation of positive antibody titer for hepatitis B; current immunization to measles, mumps, rubella, hepatitis A, varicella, and tetanus; negative TB test within the past year and departmental approval.*** (2.5+1)

HLTH F247 Introduction to Pharmacology
2 Credits
Introduction to the use of therapeutic medications in medical settings. Includes classifications of drugs, clinical use and adverse effects of the 50 most commonly prescribed medications. ***Prerequisites: HLTH F100; HLTH F114 or BIOL F100X.*** (2+0)

HLTH F261 Medical/Dental Office Reception Practicum
2 Credits Offered As Demand Warrants
Provides the student with 80 hours of practicum work in a medical or dental office, with additional time required for meeting with the campus practicum coordinator. Students will be expected to perform any and all duties of a receptionist in a medical/dental care setting. Satisfies practicum experience requirement for Medical/Dental Reception certificate. May be used to partially satisfy practicum experience requirement of Medical Assistant A.A.S. degree certificate. Graded Pass/Fail. ***Prerequisites: HLTH F122; HLTH F132; HLTH F234; enrollment by special permission only.*** (0+0+6)

HLTH F265 Phlebotomy Externship
3 Credits
Clinical experience in phlebotomy and lab assisting. Requires 120 hours of hands-on experience in the clinical setting and eight hours in extern seminars. Progress is assessed by work supervisor and externship coordinator. Satisfies the clinical externship requirement for certification as a phlebotomist by the American Society of Clinical Pathology. Graded Pass/Fail. ***Prerequisites: HLTH F245; enrollment by special permission only.*** (0+8.5+0.5-1)

HLTH F267 Medical Assisting Practicum Completion
2-4 Credits
Provides 100 hours of practicum work in the back office of a medical clinic for medical assisting students. Additional contact time required for meeting with the campus practicum coordinator. HLTH F267 combined with HLTH F261 provides experience equivalent to that in HLTH F268, and satisfies the practicum requirement for the medical assistant certificate and AAS. Graded Pass/Fail. ***Prerequisites: HLTH F122; HLTH F132; HLTH F234; HLTH F142; HLTH F244; enrollment by special permission only.*** (0+0+8)

HLTH F268 Medical Assisting Practicum
4 Credits
Provides the student with 180 hours of hands-on practicum work in a medical office, with additional time required for meeting with the campus practicum, coordinator. This is the last course in the medical assistant A.A.S. degree and certificate program for students who have not taken any specialized certificates during their course of study. Students will be expected to perform any and all duties of a medical assistant in a health care setting. The combination of HLTH F261 and HLTH F267 may be substituted for HLTH F268 to satisfy the degree requirements. Graded Pass/Fail. ***Prerequisites: HLTH F122, HLTH F132, HLTH F142, HLTH F234, HLTH F244; enrollment by special permission only.*** (0+0+12)

HIGH LATITUDE RANGE MANAGEMENT

HLRM F120 History of Domesticated Alaskan Ungulates
1 Credit Offered Spring
Review the history of domesticated ungulate populations, free-ranging and fenced systems, in Alaska beginning from the 1890s to present. Emphasis will be placed on traditional activities on the Seward Peninsula. ***Prerequisites: ENGL F111X or permission of instructor.*** (1+0)

HLRM F130 Research Field Logistics
2 Credits Offered Summer
Learn the skills, techniques, and equipment used in remote scientific fieldwork in Alaska. Course includes methods for processing and storing animal/plant tissue samples, orienteering, navigation, GPS, wilderness first aid, arctic survival, bear safety, boat safety, as well as ATV, boat, and snowmachine operation, maintenance and repair. (1+3)

HLRM F140 High Latitude Range Management
2 Credits Offered Fall
Policies and terminology of range and range management specific to Alaska and the Arctic. Review current vegetation inventory techniques used by federal and state agencies. Identify and sample Alaska forage plants. Examine range production systems in Alaska for a variety of species; domesticated and wild. Development of a high latitude range management plan. ***Prerequisites: BIOL F104X OR (BIOL F104 and BIOL F104L); NRM F101; or permission of instructor.*** (1.5+0+1.5)

HLRM F150 Alaskan Ungulate Husbandry
2 Credits Offered Summer
Students will be introduced to management skills, facilities design and nutritional needs for domesticated ungulates in Alaska. Provides exposure and examines traditional knowledge combined with contemporary research in herding and husbandry for open range and fenced systems. Field trips to reindeer, elk, bison, and/or cattle operations will demonstrate husbandry techniques and data collection procedures. ***Prerequisites: HLRM F140 or permission of instructor.*** (1.5+0+1.5)

HLRM F160 Meat Production
2 Credits Offered Spring
A study of the meat animal processing sequence. The production of meat-type domesticated ungulates in Alaska and the science and technology of their conversion to food, value-added products and by-products. A review of the current state regulations and methods on proper field slaughtering, and the preparation, handling and storage of meat will be introduced. ***Prerequisites: HLRM F140 or permission of instructor.*** (1.5+0+1.5)

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HLRM F170 **Health Issues in Domesticated Ungulates**
2 Credits Offered Fall
Ruminant anatomy and physiology specific to high latitude ungulates. Overall health issues and problem solving techniques for domesticated ungulates, including a review of indicators for disease or parasitic infections. Vaccinations and Rx treatments; including use in food animals. Field necropsy techniques and blood and tissue collection procedures. State monitoring and identification policies. ***Prerequisites: HLRM F150 or permission of instructor.*** (1.5+0+1.5)

HLRM F201 **Field Techniques for Range Management**
2 Credits Offered Summer
Provides hands-on instruction in field and laboratory techniques in range evaluation for domesticated ungulates. Basic methods for sampling and studying grazing systems at the high latitudes will be introduced. Students will participate in data collection and analysis procedures as part of an independent research project. ***Prerequisites: ABUS F155 or MATH F103X; HLRM F130; HLRM F140; or permission of instructor.*** (1+3)

HLRM F205 **Report Writing in Range Management**
2 Credits Offered Fall
Provides the basic technical reporting methods, writing, and research skills necessary to analyze, interpret, and document field and laboratory data. Incorporating field data collected in HLRM F201 and the skills, knowledge, and techniques learned in other required courses, the student will produce a written technical report and make a presentation. ***Prerequisites: ENGL F111X; HLRM F201; or permission of instructor.*** (2+0)

HISTORY

HIST F100X **Modern World History** (s)
3 Credits
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. Also available via Independent Learning. ***Prerequisites: Placement in ENGL F111X or higher; or permission of instructor.*** (3+0)

HIST F101 **Western Civilization** (s)
3 Credits Offered Fall
Origins and major political, economic, social and intellectual developments of western civilization to 1500. Also available via Independent Learning. (3+0)

HIST F102 **Western Civilization** (s)
3 Credits Offered Spring
Major political, economic, social and intellectual developments of western civilization since 1500. Also available via Independent Learning. (3+0)

HIST F103 **History of the Yukon-Kuskokwim Delta** (s)
3 Credits Offered As Demand Warrants
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. (3+0)

HIST F105 **Introduction to the History and Culture of the Seward Peninsula**
1 Credit Offered As Demand Warrants
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. Cross-listed with ANTH F105. (1+0)

HIST F110 **History of Alaska Natives** (s)
3 Credits Offered Fall
The history of Alaska Natives from contact to the signing of the Land Claims Settlement Act. Cross-listed with ANS F111. (3+0)

HIST F115 **Alaska, Land and Its People** (s)
3 Credits Offered Spring Even-numbered Years
A survey of Alaska from earliest days to present, its peoples, problems and prospects. (3+0)

HIST F121 **East Asian Civilization** (s)
3 Credits Offered Fall Even-numbered Years
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. (3+0)

HIST F122 **East Asian Civilization** (s)
3 Credits Offered Spring Odd-numbered Years
East Asia from 1800 to the present with emphasis on patterns of social cohesion, transition and revolutionary change. (3+0)

HIST F124 **African Studies: Introduction to Contemporary Sub-Saharan Africa** (s)
3 Credits Offered As Demand Warrants
A thematic overview of (sub-Saharan) Africa, covering it's geography and environment, early human evolution, social, economic and political diversity, early external influences, European Imperialism and the African responses, transatlantic slavery and its impact, African struggle for independence. Focuses on the challenges and achievements, future trends and prospect in the context of Africa today. (3+0)

HIST F131 **History of the U.S.** (s)
3 Credits Offered Fall
The discovery of America to 1865. Colonial period, revolution, formation of the constitution, western expansion, Civil War. Also available via Independent Learning. (3+0)

HIST F132 **History of the U.S.** (s)
3 Credits Offered Spring
From the reconstruction to the present. Also available via Independent Learning. (3+0)

HIST F202 **History of Women in America** (s)
3 Credits Offered Fall Odd-numbered Years
A chronological approach to the history of women in America. Introduction to major issues of concern to historians of women, as well as different approaches utilized in analysis of women's past; consideration of multiracial backgrounds of American women. Cross-listed with WGS F202. (3+0)

HIST F244 **Movies: Mirror of the World** (s)
3 Credits Offered As Demand Warrants
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. (3+0)

HIST F250 **Alaska History for Local Historians**
3 Credits Offered As Demand Warrants
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 Strait, Bristol Bay and Aleutian/Pribilof regions. (3+0)

HIST F275 **Perspectives on History**
3 Credits Offered Fall
An introduction to the variety of historical approaches and to the "uses" of history. (Course is required for history majors and should be taken soon after declaring a History major as possible; non-majors are strongly discouraged from taking this course.) (3+0)

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HIST F305 **Europe: 1789 — 1850** (s)
3 Credits Offered Fall Even-numbered Years
The French Revolution, Napoleon, the Industrial Revolution, the Revolutions of 1848, their impact on political, economic, social and intellectual history. ***Prerequisites: Junior standing or permission of instructor.*** (3+0)

HIST F306 **Europe: 1850 — 1900** (s)
3 Credits Offered Spring Odd-numbered Years
The European Imperium: industrialization, nationalism, imperialism and their impact on political, economic, social and intellectual history. ***Prerequisites: Junior standing or permission of instructor.*** (3+0)

HIST F315 **Europe: 1900 — 1945** (s)
3 Credits Offered Fall Odd-numbered Years
Europe through two world wars, the Russian Revolutions the depression, the development of fascism, the evolution of Russian communism. ***Prerequisites: Junior standing or permission of instructor.*** (3+0)

HIST F316 **Europe Since 1945** (s)
3 Credits Offered Spring Even-numbered Years
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: Junior standing or permission of instructor.*** (3+0)

HIST F325 **The History of Sexuality** (s)
3 Credits Offered Summer
The history of sexuality from a worldwide comparative perspective. We will consider theories and debates about the history of sexuality, and then focus on the history of sexuality in selected times and places, with an emphasis on the modern period. ***Recommended: ENGL F211X or ENGL F213X; HIST F100X; or permission of instructor.*** Cross-listed with WGS F325. (3+0)

HIST F329 **History of the Middle East** (s)
3 Credits Offered As Demand Warrants
General survey of the Middle East from the rise of Islam to contemporary conditions. Includes classical Islam, the decline of the Ottoman Empire, modernization, European colonial influences, the Arab-Israeli conflict, political movements within the Islamic world, the position of women in Middle Eastern societies, petroleum politics and explorations of Middle Eastern culture. ***Recommended: HIST F100X.*** (3+0)

HIST F330 **Modern China** (s)
3 Credits Offered Fall Odd-numbered Years
From 1800 to the present: resistance to change, rebellion, reform, revolution and the rise of the People's Republic. ***Prerequisites: Junior standing or permission of instructor.*** (3+0)

HIST F331 **Modern Japan** (s)
3 Credits Offered Spring Even-numbered Years
From 1600 to the present: change within tradition, rise to world power and the position of Japan in the modern world. ***Prerequisites: Junior standing or permission of instructor.*** (3+0)

HIST F333 **Foundations of Japanese History** (s)
3 Credits Offered Fall Even-numbered Years
The history of Japan from earliest times to 1600: the aristocratic culture of classical Japan, the rise of the samurai in medieval Japan, the "warring states" period and national unification. Myths, religion and philosophy, and culture, arts and literature will also be covered from a historical point of view. ***Prerequisites: ENGL F211X or ENGL 213X; HIST F100X; or permission of instructor. Recommended: HIST F121.*** (3+0)

HIST F361 **Early American History** (s)
3 Credits Offered Fall Odd-numbered Years
An advanced survey that examines economic, political and social developments related to the establishment of European colonies, Indian-white relations, slavery, American Revolution, constitutional debate and the Early Republic through the War of 1812. ***Recommendations: HIST F131; sophomore standing.*** (3+0)

HIST F362 **History of the United States 1815-1877** (s)
3 Credits Offered Spring Even-numbered Years
An advanced survey that examines economic, political and social developments related to Jacksonian America, western expansion, slavery and sectionalism, the Civil War and reconstruction to 1877. ***Recommendations: HIST F131; sophomore standing.*** (3+0)

HIST F363 **History of the United States 1877-1945** (s)
3 Credits Offered Fall Even-numbered Years
An advanced survey that examines economic, political, and social developments related to Gilded Age America, progressive reform efforts, colonialism and the United States during two world wars. ***Recommendations: HIST F132; sophomore standing.*** (3+0)

HIST F364 **History of the United States 1945 to Present** (s)
3 Credits Offered Spring Odd-numbered Years
An advanced survey course that examines economic, political and social developments related to the Cold War, Civil Rights movement, rise of a counterculture, Vietnam war and its legacy, and America after the fall of Soviet Union. ***Recommendations: HIST F132; sophomore standing.*** (3+0)

HIST F368 **Topics in American Film History** (s)
3 Credits Offered As Demand Warrants
An in-depth study of American film and how it shapes and warps popular perceptions of America's past. A historical contrast according to Hollywood with the views and interpretations of historians. Content will vary depending on the specific genre or period of focus, such as World War II, the Vietnam War, the Great Depression, the Cold War and development of the west, etc. Course may be repeated for credit when content varies. ***Prerequisites: ENGL F111X; junior standing; or permission of instructor.*** Cross-listed with JRN F368. (3+0)

HIST F401 **Renaissance and Reformation Europe** (s)
3 Credits Offered Fall Even-numbered Years
Political, economic and intellectual developments during the 15th and 16th centuries in Europe. ***Prerequisites: HIST F275 or permission of instructor.*** (3+0)

HIST F402 **Seventeenth and Eighteenth Century Europe** (s)
3 Credits Offered Fall Odd-numbered Years
Political, social, economic, and cultural developments during the 17th and 18th centuries in Europe. ***Prerequisites: HIST F275 or permission of instructor.*** (3+0)

HIST F404 W **Modern Scandinavia** (s)
3 Credits Offered As Demand Warrants
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. ***Prerequisites: HIST F275 or permission of instructor.*** (3+0)

HIST F405 **Modern Germany** (s)
3 Credits Offered As Demand Warrants
The history of Germany from 1848 to the present. Topics include German unification under Prussian leadership; the nature and problems of the Bismarckian Reich; the outbreak of World War I and the war's impact on Germany; the rise and fall of the Weimar Republic and the Third Reich; World War II and Germany's defeat; and the postwar division, reconstruction, and reunification of Germany. Special attention given to social developments in Germany. ***Prerequisites: HIST F275 or permission of instructor.*** (3+0)

HIST F411 **Environmental History** (s)
3 Credits Offered Spring Even-numbered Years
Discussion of significant works of environmental history. Cultural history of the landscape in world civilization with emphasis on Western Europe and North America. Discussion of interdisciplinary approaches to the history of the environment and cooperative work across disciplines. ***Prerequisites: ENGL F211X or ENGL F213X; HIST F100X; HIST F275; or permission of instructor.***

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Recommended: An introductory biology course. Stacked with NORS F611. (3+0)

HIST F414 **Women and Gender in East Asian History** (s)
3 Credits Offered As Demand Warrants
An in-depth seminar on the history of East Asia, with a special emphasis on the experiences of women and on the issue of gender. This seminar will focus on the modern period, and on China and Japan especially, though other regions of East Asia may also be considered. ***Prerequisites: ENGL F211X or ENGL F213X; HIST F100X; or permission of instructor. Recommended: HIST F122 and/or HIST F275.*** (3+0)

HIST F415 **Seminar in World History** (s)
3 Credits
Undergraduate seminar addressing issues relating to teaching world history. Actual topics will vary to reflect recent developments in published historical literature but will include the histories of food supply, population growth, sustainability, consumerism, technology, religion, social groups, milestones of civilization and culture, and environmental history. Topics will be explored to spark discussion of issues in world history including research themes, pedagogic challenges and textual criticism. Especially intended as enrichment course for students planning careers in social science education. ***Prerequisites: ECON F100X or PS F100X; ENGL F211X or ENGL F213X; HIST F100X; HIST F275; or permission of instructor.*** (3+0)

HIST F424 **Topics in Women's History** (s)
3 Credits Offered As Demand Warrants
An in-depth seminar on a specific topic of current interest. Topics may change and may cover the history of European or American women from the 18th century to the present. ***Prerequisites: HIST F275 or permission of instructor.*** Cross-listed with WGS F424. (3+0)

HIST F434 **Topics in History** (s)
3 Credits Offered As Demand Warrants
An in-depth seminar on various topics in History. Approach will vary depending on the subject of the study, but will emphasize reading, critical analysis and writing on a major issue in history. Content will vary to take advantage of different directions in history, such as cultural, intellectual or economic history. Course may be repeated for credit when content varies. ***Prerequisites: HIST F275 or permission of instructor.*** (3+0)

HIST F442 **History of the American Military** (s)
3 Credits Offered Fall
The military's place in American life and society from the Colonial era to the present. Role of the military institution in shaping the nature of American society while reflecting the character of the society it serves. Also available via Independent Learning. ***Prerequisites: HIST F275 or permission of instructor.*** Cross-listed with MILS F442. (3+0)

HIST F445 **History of the American West** (s)
3 Credits Offered Fall Even-numbered Years
Seminar with emphasis on readings and analysis of primary and secondary sources dealing with the American West to present. Major themes include historiography, expansion, the Federal government, environment, ethnicity and economic development. ***Prerequisites: HIST F275 or permission of instructor.*** (3+0)

HIST F446 **American Indian History** (s)
3 Credits Offered as Demand Warrants
Seminar with emphasis on readings and analysis of primary and secondary resources related to American Indians from the pre-contact era to present. Major themes include historiography, inter-cultural relations, subsistence and environment, federal policy and contemporary issues. ***Prerequisites: HIST F275 or permission of instructor.*** (3+0)

HIST F451 **History of U.S. Foreign Policy** (s)
3 Credits Available via Independent Learning only.
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. ***Prerequisites: Junior standing or permission of instructor.*** (3+0)

HIST F455 **Military History** (s)
3 Credits Offered Fall Even-numbered Years
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.*** (3+0)

HIST F461 W **History of Alaska** (s)
3 Credits Offered Fall
Alaska from prehistoric times to the present, including major themes such as Native Alaska, colonial and military Alaska, statehood, Alaska Native Claims Settlement Act of 1971 and the Alaska National Interest Lands Act of 1980. Also available via Independent Learning. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; HIST F275; or permission of instructor.*** Stacked with HIST F662; NORS F661. (3+0)

HIST F463 **Foundations of Russian History** (s)
3 Credits Offered Fall Odd-numbered Years
The foundations of Russian society and the modern Russian state from the earliest recorded events through the early 19th century. Topics include the Scythians and Khazars, the rise of the Kievan state, Mongol domination of Russia, the rise of Muscovy, the creation of the Russian Empire under the Romanov dynasty, ethnic and social diversity, the impact of the Napoleonic invasion and the influence of western European ideas in Russia. ***Prerequisites: HIST F275 or permission of instructor. Recommended: HIST F102.*** Stacked with HIST F663; NORS F663. (3+0)

HIST F464 **Modern Russia** (s)
3 Credits Offered Fall Even-numbered Years
Russia from the early 19th century to the present. Themes include politics, culture and society in the Russian Empire, the Russian Revolution, the Soviet Union and the Russian Federation. ***Prerequisites: HIST F275 or permission of instructor.*** Stacked with HIST F664; NORS F664. (3+0)

HIST F467 W **Political Development in Latin America and the Caribbean** (s)
3 Credits Offered Fall Odd-numbered Years
Exploration of major issues and concepts in the development and governances of modern Latin America and the Caribbean region, including the legacies of colonialism, revolution, military rule, economic challenges and the quest for democratic stability. Includes a historical overview of the region and cases drawn from the Caribbean, Mexico, Central and South America. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; HIST F275; or permission of instructor. Recommended: SPAN F221.*** Cross-listed with PS F467. (3+0)

HIST F475 W **Historiography** (s)
3 Credits Offered Fall
Seminar discussions and lectures introduce philosophical approaches to history. Examines various methodological approaches to historical inquiry. Includes the nature of historical evidence, questioning of the role of truth and objectivity in history, an examination of the role of the historian in interpreting historical evidence, and different interpretations of historical events and actions. Designed for history majors and minors, and graduate students seeking to conduct historical research. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; HIST F275; history major with senior standing; or permission of instructor.*** (3+0)

HIST F476 W,O **Senior Thesis** (s)
3 Credits Offered Spring
Preparation and writing of a senior thesis using primary research materials on a topic of the student's choosing. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; HIST F475; permission of instructor.*** (3+0)

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HIST F481 Polar Exploration and its Literature (s)
3 Credits Offered Spring Even-numbered Years
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. ***Prerequisites: HIST F275 or permission of instructor.*** Stacked with HIST F681; NORS F681. (3+0)

HIST F483 W 20th Century Circumpolar History (s)
3 Credits Offered Spring Even-numbered Years
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. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; HIST F275; or permission of instructor.*** Stacked with HIST F683; NORS F683. (3+0)

HIST F490 W Researching and Writing Northern History
3 Credits Offered Spring Odd-numbered Years
Exploration of the craft and methodology of historical research in the North. Course may be repeated for credit when content varies. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; HIST F275; or permission of instructor.*** Stacked with NORS F690. (1+3)

HIST F600 Perspectives on the North
3 Credits Offered Fall
Basic knowledge of the circumpolar North — the social, economic, political and scientific facets of northern life. Consideration of major cultural groups of the north and their histories, the environmental settings and patterns of settlement and development in northern regions and systems of governance in different northern countries. Broad overview of the major policy issues of the North in education, justice, health care, and environmental and wildlife protection. Course is also available online. Cross-listed with NORS F600. (3+0)

HIST F661 Mentored Teaching in History
1 Credit
Mentored teaching provides consistent contact and supervision between student and mentoring faculty. Includes seminar, individualized tutorial and opportunity to develop teaching skills and techniques. Teaching assistants are required to be enrolled in a mentored teaching section during the period of their assistantship. May be repeated up to four times for credit. Graded Pass/Fail. ***Prerequisites: Enrollment in M.A. in Northern Studies or History; permission of instructor.*** (1+0+2)

HIST F662 History of Alaska
3 Credits
Alaska from prehistoric times to the present, including major themes such as Native Alaska, colonial and military Alaska, statehood, Alaska Native Claims Settlement Act of 1971 and the Alaska National Interest Lands Act of 1980. Also available via Independent Learning. Cross-listed with NORS F661. Stacked with HIST F461. (3+0)

HIST F663 Foundation of Russian History
3 Credits
The foundations of Russian society and the modern Russian state from the earliest recorded events through the early 19th century. Topics include the Scythians and Khazars, the rise of the Kievan state, Mongol domination of Russia, the rise of Muscovy, the creation of the Russian Empire under the Romanov dynasty, ethnic and social diversity, the impact of the Napoleonic invasion and the influence of Western European ideas in Russia. ***Prerequisites: HIST F275 or permission of instructor.*** Cross-listed with NORS F663. Stacked with HIST F463. (3+0)

HIST F664 Modern Russia
3 Credits
Russia from the early 19th century to the present. Themes include politics, culture and society in the Russian Empire, the Russian Revolution, the Soviet Union and Russian Federation. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with NORS F664. Stacked with HIST F464. (3+0)

HIST F681 Polar Exploration and its Literature
3 Credits
A survey of polar exploration efforts of all Western nations from A.D. 870 to the present and a consideration of historical sources of this effort. Also available via Independent Learning. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with NORS F681. Stacked with HIST F481. (3+0)

HIST F683 20th Century Circumpolar History
3 Credits
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. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with NORS F683. Stacked with HIST F483. (3+0)

HOMELAND SECURITY AND EMERGENCY MANAGEMENT

HSEM F301 Principles of Emergency Management and Homeland Security
3 Credits Offered Spring
The course provides a foundational perspective as to how our present federal emergency management and homeland security structure emerged with emphasis placed on the characteristics, functions, and resources of its integrated systems. This course additionally focuses on the principles and practices of homeland security and emergency management at the local, state and federal levels. ***Prerequisites: MATH F107X or MATH F161X*** (3+0)

HSEM F412 Emergency Planning and Preparedness
3 Credits Offered Fall or Spring
This course will examine the concepts of developing and writing an emergency operations plan and the elements necessary for inclusion in the plan (all-hazards risk analysis). Students will transition through the process of identifying hazards, creating plans and developing a program which specifically addresses planning and preparedness objectives. ***Prerequisites: HSEM F301; or permission of instructor.*** (3+0)

HSEM F423 Disaster Response Operations and Management
3 Credits Offered As Demand Warrants
The purpose of this course is to develop an understanding of the principles that promote effective disaster response and recovery operations after disasters. To achieve this goal, the course will examine the nature of disasters as well as the roles and responsibilities of various actors involved in emergency management and homeland security. Various problems associated with response and recovery operations will be identified and discussed with special emphasis on the role of technology and communications coordination. ***Prerequisites: HSEM F301 or permission of instructor.*** (3+0)

HSEM F434 All Hazards Risk Analysis
3 Credits Offered Fall
This course covers risk analysis and assessment from an All-Hazards emergency management and homeland security perspective. Students will explore vulnerability and risk assessment methodologies for natural, man-made as well as technological disasters/events and develop an understanding of the processes used in identifying and quantifying vulnerabilities in a system (e.g., a physical facility such as a chemical plant, or an infrastructure component such as a power plant). ***Prerequisites: HSEM F301 or permission of instructor.*** (3+0)

HSEM F445 Business Continuity and Crisis Management
3 Credits As Demand Warrants
The course serves as introduction to crisis management and organizational continuity from a private sector business crisis and continuity management partnership perspective. The topics include comprehensive emergency

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management, public and private roles and partnerships for emergency and crisis management, the risk management process, strategic crisis management, contingency planning, training and exercises, emergency response, business continuity and recovery, the role of the crisis management team, and crisis communication. ***Prerequisites: HSEM F301 or permission of instructor*** (3+0)

HSEM F456 **Leadership and Influence During Crisis**
3 Credits Offered As Demand Warrants
This course focuses on the challenges faced by those who serve as leaders during crisis and emergency circumstances. During emergency circumstances, leading others, being able to influence and motivate them during crisis is critical. Topics including leadership and followership, crisis decision making, fear and emotion and the unique circumstances of an emergency manager/ homeland security professional are examined. Cross-listed with LEAD F456. ***Prerequisites: HSEM F301 or permission of instructor.*** (3+0)

HONORS

Honors director approval required for enrollment in any Honors courses.

HONR F241 **Honors Viewpoints of Humanity I** (h)
3 Credits Offered Fall
This course will provide a deep exposure to the core concepts and themes of modern civilization through interdisciplinary study based in primary literature. Course readings will span the range of humanities and social sciences readings; readings in HONR F241 and F242 are distinct but complementary. Open only to Honors students; required of all second-year Honors students. ***Prerequisites: ENGL F211X or ENGL F213X; COMM F131X or COMM F141X.*** (3+0)

HONR F242 **Honors Viewpoints of Humanity II**
3 Credits Offered Spring
This course will provide a deep exposure to the core concepts and themes of modern civilization through interdisciplinary study based in primary literature. Course readings will span the range of humanities and social sciences; readings in HONR F241 and F242 are distinct but complementary. Open only to Honors students; required of all second-year Honors students. ***Prerequisites: ENGL F211X or ENGL F213X; COMM F141X or COMM F131X.*** (3+0)

HONR F290 **Summer Reading Program** (h)
2 Credits Offered Fall
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. ***Prerequisites: ENGL F111X; enrollment in the Honors Program; or permission of instructor.*** (2+0)

HONR F381 **Honors Capstone Development**
1 Credit
The single greatest part of the Honors education at UAF is the student's capstone project, which uniquely defines them as a scholar. In recognition of the value of the capstone project, and to support each student's goal to successfully complete their capstone project, the sequence of Honors Capstone courses is required of Honors students during their last two years of study. This course is the first in the sequence. Students in this course will develop their capstone proposal and by the end of the course will be fully prepared to begin their capstone projects. Open only to Honors students; required of all third-year Honors students. ***Prerequisites: ENGL F211X or ENGL F213X and COMM F141X or COMM F 131X. Recommended: Honors sections of ENGL F211X or ENGL F213X and of COMM F141X.*** (1+0)

HONR F382 **Honors Capstone Support**
1 Credit
The single greatest part of the Honors education at UAF is the student's capstone project, which uniquely defines them as a scholar. In recognition of the value of the capstone project, and to support each student's goal to successfully complete their capstone project, the sequence of Honors Capstone courses is required of Honors students during their last two years of study. This course is the second in the sequence. Students in this course will present regular progress reports and prepare (at least) one abstract at the level of a presentation at a regional or national meeting; by the completion of the course, each student will have made significant advancement towards the completion of their capstone project. Open only to Honors students; required of all third-year (spring) and fourth-year (fall) Honors students. This course may be repeated twice for credit. ***Prerequisites: ENGL F211X or ENGL F213X; COMM F141X or COMM F 131X; HONR F381. Recommended: Honors sections of ENGL F211X or ENGL F213X and of COMM F141X.*** (1+0)

HONR F383 **Honors Capstone Seminar**
1 Credit Offered Spring
The single greatest part of the Honors education at UAF is the student's capstone project, which uniquely defines them as a scholar. In recognition of the value of the capstone project, and to support each student's goal to successfully complete their capstone project, the sequence of Honors Capstone courses is required of Honors students during their last two years of study. This course is the last in the sequence. Students in this course will present their work to an audience of their peers, and practice the skills of posing substantive questions to speakers outside their own fields. Open only to Honors students; required of all fourth-year Honors students. ***Prerequisites: HONR F381; HONR F382; ENGL F211X or ENGL F213X; COMM F141X or COMM F131X. Recommended: Honors sections of ENGL F211X or ENGL F213X and of COMM F141X.*** (1+0)

HONR F390 **Liability and Values**
3 Credits Offered As Demand Warrants
The study of standards of conduct and moral judgement. The professional, moral and ethical responsibilities of the individual to employers, employees and society will be examined. ***Prerequisites: Sophomore standing; permission of the Honors Director or instructor.*** (3+0)

HUMAN SERVICES

HUMS F101 **Introduction to Human Services**
3 Credits Offered As Demand Warrants
Provides an overview and orientation for individuals who have either started or are exploring human service careers. Designed for entry level behavioral health providers with an emphasis in understanding social service systems in rural and frontier Alaska. Learners will consider the theoretical foundations of the helping process both personal and external-driven while setting a career path that builds on individual strengths. Students should come away knowing their current worker competencies and those yet to be developed. ***Recommended: Should be taken within the first academic year when possible. Strongly encourage students to be accepted into the Human Services Degree Program.*** (3+0)

HUMS F102 **Standards of Practice**
2 Credits
Designed to provide an integrative approach for ongoing development of critical thinking skills, best practices evaluation, and application of skills based competencies. Students will be challenged to integrate their learning from any previous human service or related training and education, past and present work settings as well as life experiences. This process will be facilitated through the development of a professional portfolio, collaborative group learning, class discussions and the use of blended learning approaches. ***Recommended: This course should be taken as soon as possible upon acceptance into the Human Services Program.*** (2+0)

HUMS F105 **Personal Awareness and Growth**
2-3 Credits
Interpersonal and intrapersonal communication explored. Personal growth process presented from a holistic perspective. Focus will identify opportunities for personal enrichment through increased awareness of self and others. (2-3+0)

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HUMS F117 Math Skills for Human Services
1-3 Credits Offered As Demand Warrants
Computation involving percentages, estimation, problem- solving, reading and creating graphs and tables, data organization and interpretation. Applications of computational skills will be emphasized. Cross-listed with ECE F117. (1-3+0)

HUMS F120 Cultural Diversity in Human Services
3 Credits Offered Spring
The impact of culture on the delivery of human services including Alaska Native cultures; examination of relationship of multicultural and multi-ethnic concepts. Issues of age, class, disablement, race, gender and sexual orientation will also be discussed. Student exploration of personal values and cultural world view included. (3+0)

HUMS F125 Introduction to Addictive Processes
3 Credits
Focus on gaining knowledge of the psycho-social aspects of addiction. Historic and behavioral approaches, disease concept and current trends relating to addiction presented. Twelve step and self-help approaches explored. Also available via Independent Learning. Cross-listed with JUST F125. (3+0)

HUMS F130 Introduction to Mental Health and Developmental Disabilities
3 Credits Offered As Demand Warrants
Overview of the history, philosophy and identification of the mental health and developmental disability population. Basic introduction to service principles and suitability for a career in this field. ***Recommended: PSY F101; PSY F240.*** (3+0)

HUMS F140 Family Empowerment I
3 Credits Offered As Demand Warrants
Introduction to the concepts of the empowerment approach, with application to families. Concepts include respect, focus on strengths and needed system changes. Prepares and supports workers in applying skills to families. (3+0)

HUMS F150 Workforce Development I
3 Credits Offered As Demand Warrants
Introduction to the profession of workforce development, including career development theory, relevant helping skills, diverse populations, and ethics and consulting. First of two courses required to become certified as a career development facilitator. (3+1)

HUMS F170 Residential Child Care
3 Credits Offered As Demand Warrants
Reviews general knowledge and specific skills required to become a competent child care worker in a residential setting. Knowledge and skills in child development, healthy relationships, attachment and separation, treatment and case planning, creating a healthy treatment environment, crisis and suicide intervention, and engaging families will be introduced. ***Recommended: PSY F101.*** (3+0)

HUMS F202 Standards of Practice II
1 Credit Offered Spring
This course is designed for students who are either in practicum placement or finalizing their Human Services degree program. Students will demonstrate their competencies as lifelong learners, professional readiness and personal development by encompassing their best written work and self assessment by refining their human services portfolios. Active verbal participation is required. ***Prerequisite: HUMS F102 or departmental approval.*** (1+0)

HUMS F205 Basic Principles of Group Counseling
3 Credits Offered Spring
Concepts and techniques of working with small groups, including establishing group goals, effective group interaction, termination and evaluation. Development of therapeutic group activities presented. (3+0)

HUMS F210 Crisis and Grief Counseling
3 Credits Offered Fall
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. (3+0)

HUMS F215 Individual Interviewing
2-3 Credits
Introduction to interpersonal communication skills. Focus on gathering client information through the interviewing process. Emphasis on development of one to one interviewing, behavioral observation and documentation. (2-3+0)

HUMS F232 Human Service Practicum I
3 Credits
Integration of human service theory with skill-based training through a professional, supervised experience in a human service agency. Practicum requires 125 hours. Seminar also meets one hour per week; student-shared learning, peer support and documentation, including progress notes, social history, mental status and case planning. ***Prerequisites: Human Services major or minor; permission of instructor.*** (1+8)

HUMS F233 Human Service Practicum II
3-6 Credits
Continuation of HUMS F232. Course may be repeated once for credit to meet program requirements. ***Prerequisites: HUMS F232.*** (1+8)

HUMS F240 Family Empowerment II
4 Credits Offered As Demand Warrants
Designed for family workers to learn empowerment skills which will help them work more effectively with families. Concepts and skills include family development assessment and planning, home visiting, referrals, special services needed and how to assess them, family conferencing and cooperation and collaboration skills in working with other agencies. State and national policies affecting families and family empowerment are considered. ***Prerequisites: HUMS F140.*** (4+0)

HUMS F250 Current Issues in Human Services
1-4 Credits Offered As Demand Warrants
Selected current issues of importance to the human service field. Emphasis on issues impacting Alaskan communities. Repeatable for credit by Human Services majors to a maximum of 9 credits. (1-4+0)

HUMS F255 Workforce Development II
3 Credits Offered As Demand Warrants
Continuation of HUMS F150. Emphasis on labor market information, assessment, employability skills, public relations, program management and useful technology. Successful completion of HUMS F150 and HUMS F255 qualifies student for the certification as a career development facilitator. ***Prerequisites: HUMS F150.*** (3+1)

HUMS F260 History of Alcohol in Alaska
1 Credit
Significant historical forces, events and consequences related to alcohol and other drug use in Alaska. Includes current impact and trends. ***Prerequisites: HUMS F125 or permission of instructor.*** (1+0)

HUMS F261 Substance Abuse Assessment: ASAM PPC II
1 Credit Offered As Demand Warrants
Treatment begins with assessment of need and intensity of services required. Students will understand criteria of ASAM: PPC II and have the skill to apply it to specific cases. ***Prerequisites: HUMS F125 or permission of instructor.*** (1+0)

HUMS F262 Pharmacology of Addictions
1 Credit Offered As Demand Warrants
Pharmacological overview of the significant drugs of abuse in today's society. ***Prerequisites: HUMS F125.*** (1+2)

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HUMS F263 **Fetal Alcohol Spectrum Disorder** (FASD)
1 Credit
Identification of alcohol-related neurodevelopmental disorder (fetal alcohol syndrome/effect), understanding of developmental differences, secondary problems and development of intervention strategies leading to best practice. (1+0)

HUMS F264 **Culture, Chemical Dependency and Alaskan Natives**
1 Credit Offered As Demand Warrants
The importance of culture to recovery and the impact of cultural diversity on counseling and service delivery. Meets requirements for certification as substance abuse counselor in Alaska. ***Prerequisites: HUMS F125.*** (1+0)

HUMS F265 **Substance Abuse and the Family**
1-2 Credits Offered As Demand Warrants
Basic understanding of family dynamics and roles related to addictions. ***Prerequisites: HUMS F125 or permission of instructor.*** (1-2+0)

HUMS F266 **Co-occurring Disorders**
1-2 Credits Offered As Demand Warrants
Theories and skills related to counseling the mentally ill substance abuser. Includes diagnosis, treatment planning and approaches, and special considerations. ***Prerequisites: HUMS F125.*** (1-2+0)

HUMS F270 **Adolescent Issues and Therapeutic Interventions**
3 Credits Offered As Demand Warrants
Basic knowledge of adolescent development and culture for the human services residential care worker. Includes communication and intervention strategies, and life skills assessment with case planning. ***Prerequisites: HUMS F170 or permission of instructor.*** (3+0)

HUMS F271 **Managing Aggressive Behavior**
1 Credit Offered As Demand Warrants
Basic knowledge and skills required to prevent and intervene in the aggressive behavior of children and youth, primarily in a residential setting. Includes interaction model of crisis intervention, the importance of blending in crisis intervention, the appropriate use of non-physical and physical intervention techniques, and effective limits and consequences. ***Prerequisites: HUMS F170.*** (1+0)

HUMS F272 **Attachment, Separation, and Loss**
1 Credit Offered As Demand Warrants
Understanding of the components of the attachment cycle and effects on children when the cycle is disrupted by abuse, neglect, separation and placement. Includes strategies to deal with the losses. ***Prerequisites: HUMS F170.*** (1+0)

HUMS F280 **Prevention and Community Development**
3 Credits Offered Fall
Examine the historical evaluation, conceptual framework, practical realities of community development and prevention in rural Alaska. Surveys various approaches to addressing community needs, with examples from developing countries and the lower-48 as well as offers a multiplicity of approaches which can be considered in designing and implementing effective and culturally sound community projects. Collecting data to ascertain which needs exist, skills on how to build community consensus as well as exposure to the community readiness model are also covered in this course. Evaluation of efforts in terms of their success and effectiveness will also be introduced. ***Prerequisite: HUMS F101; HUMS F102; or departmental approval.*** (3+0)

HUMS F290 **Case Management**
3 Credits Offered Fall
Challenge and broaden students' understanding, thinking and conceptualizing of case management. Investigate the case management model emphasizing its useful application to various client groups with an emphasis on Alaska and rural communities. The different roles and aspects of effective case management will be explored and students will practice case management skills both at the individual level and as part of an interdisciplinary team. The role of the community in supporting such efforts as well in providing resources such as natural supports will be emphasized. Use of and knowledge of local, regional and statewide and national resources will be highlighted. Several specific functions of case management will be specifically emphasized, including that of advocate and broker. ***Prerequisite: HUMS F101; HUMS F102; or departmental approval.*** (3+0)

HUMS F301 **Ethics in Human Service**
3 Credits Offered Spring
Professional and ethical issues related to the helping professions. Ethical concerns in multicultural and rural human service delivery. Ethics and legal issues related to substance abuse counseling in Alaska. ***Prerequisites: PSY F101 or SOC F100X.*** (3+0)

HUMS F305 **Substance Abuse Counseling**
3 Credits Offered Spring
Introduction to the basic principles of substance abuse counseling. Application of counseling modalities to intervention and treatment of individuals, families and groups experiencing alcohol and drug abuse or dependence. Cross-cultural issues addressed. ***Prerequisites: HUMS F125.*** (3+0)

HUMS F310 **Management of Complex Cases**
3 Credits Offered As Demand Warrants
Concepts, policies, skills and techniques required for competence and confidence in effective case management in the human services. Includes assessment tools, advanced skills and treatment planning for complex cases, community resource identification, documentation, consultation, advocacy, building alliances with multi-agency treatment teams, and management of conflict and confrontation. Strength-based, empowerment approach. ***Prerequisites: HUMS F215 or RHS certificate. Recommended: HUMS F125; PSY F101.*** (2+2)

HUMAN SERVICES

HMSV F340 **Peer Advisor Training**
1 Credit Offered Spring
Emphasis on developing skills needed to assist exploratory/undecided students with their academic planning and decision making. Topics include resource referral, communication/active listening, academic and career planning, time and stress management, group dynamics, and values clarification. Graded Pass/Fail. ***Prerequisites: Sophomore standing; application.*** (1+0)

HMSV F342 **Peer Advising Practicum**
1-3 Credits
Supervised peer advising experience (both individually and paired with faculty member) in the Academic Advising Center or appropriate department, allowing for application of theory and skills gained in HMSV F340. Course may be repeated once for credit. Graded Pass/Fail. ***Prerequisites: HMSV F340.*** (0+0)

HUMANITIES

HUM F101 **The Humanities: A Cultural Perspective** (h)
3 Credits Offered As Demand Warrants
Examination of humanities using a non-Yup'ik culture and the Yup'ik culture 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 non-Yup'ik culture to help students develop greater awareness of forces that affect them. Offered only at the Kuskokwim campus. (3+0)

HUM F201X **Unity in the Arts** (h)
3 Credits
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. ***Prerequisites: Placement in ENGL F111X or higher; sophomore standing; or permission of instructor.*** (3+0)

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HUM F332 **Varieties of Visual Expression: Art as Image and Idea** (h)
3 Credits Offered As Demand Warrants
Discussion of the visual elements of art, principles of visual organization, the process of artistic perception and its evaluation by the viewer. ***Prerequisites: 3 credits in the visual arts or permission of instructor.*** (3+0)

HUM F469 W **Architecture: Art, Design, Technology and Social Impact** (h)
3 Credits Offered Fall Even-numbered Years
Concepts of environmental, urban and industrial design. Relationship of human and natural environment is stressed in this history of architecture with special attention given to contemporary conditions in urban areas and effects of industrialization and mechanization on human living and working spaces, artistic design and aesthetics. ***Prerequisites: ART F261 and ART F262 OR HUM F201X; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** Cross-listed with ART F469. (3+0)

HUM F492 **Senior Seminar** (h)
3 Credits Offered Fall Even-numbered Years
Consideration of the humanities at the University of Alaska and on alternate approaches elsewhere. Student project paper required with oral presentation and defense. ***Prerequisites: Open requirements or permission of instructor.*** (3+0)

ITALIAN

ITAL F100A **Elementary Italian I** (h)
3 Credits Offered as Demand Warrants
Introductory study of the Italian language, culture and geography. Focuses on language skills to include grammar, vocabulary, pronunciation, and contemporary use of the language. Students will be introduced to the written and spoken language while learning about Italian culture. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements. (3+0)

ITAL F100B **Elementary Italian II** (h)
3 Credits Offered as Demand Warrants
For students already in the process of learning Italian. Will be working individually, in pairs and in small groups toward reading, writing, listening and speaking. Focuses on language skills to include vocabulary terms, grammatical structures and conversational abilities. Will also learn about different cultures in the Italian-speaking world. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements. ***Prerequisites: ITAL F100A or permission of instructor.*** (3+0)

JAPANESE

JPN F100A **Elementary Japanese 1A** (h)
3 Credits Offered As Demand Warrants
Courses JPN F100A and JPN F100B are introductory courses in the Japanese language and culture with an emphasis on the spoken and written language. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements. (3+0)

JPN F100B **Elementary Japanese 1B** (h)
3 Credits Offered As Demand Warrants
Courses JPN F100A and JPN F100B are introductory courses in the Japanese language and culture with an emphasis on the spoken and written language. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements. ***Prerequisites: JPN F100A or instructor permission.*** (3+0)

JPN F101 **Elementary Japanese I** (h)
5 Credits Offered Fall
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. (5+0)

JPN F102 **Elementary Japanese II** (h)
5 Credits Offered Spring
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. Course is taught in Japanese. ***Prerequisites: JPN F101 or equivalent.*** (5+0)

JPN F201 **Intermediate Japanese I** (h)
4 Credits Offered Fall
The student will learn to read and write an additional 250 kanji. Conversational ability and listening comprehension enhanced by using videotape materials. Course is taught in Japanese. ***Prerequisites: JPN F102 or equivalent.*** (4+0)

JPN F202 **Intermediate Japanese II** (h)
4 Credits Offered Spring
The student will learn to read and write an additional 250 kanji. Conversational ability and listening comprehension enhanced by using videotape materials. Course is taught in Japanese. ***Prerequisites: JPN F201 or equivalent.*** (4+0)

JPN F210 **Beginning Kanji** (h)
2 Credits Offered Fall
Students will learn to read and write 500 basic kanji (Chinese characters) through studying their history, composition and artistic value. ***Prerequisites: Hiragana and Katakana recognition.*** (2+0)

JPN F301 **Advanced Japanese** (h)
3 Credits Offered Fall
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. ***Prerequisites: JPN F202 or equivalent.*** (3+0)

JPN F302 O **Advanced Japanese** (h)
3 Credits Offered Spring
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. ***Prerequisites: COMM F131X or COMM F141X; JPN F301 or equivalent.*** (3+0)

JPN F310 **Intermediate Kanji** (h)
2 Credits Offered Spring
Continuation of JPN F210 Beginning Kanji. Students will learn to read and write additional 500 kanji (Chinese characters) through studying their history, composition and artistic value. ***Prerequisites: JPN F210.*** (2+0)

JPN F311 **Advanced Kanji** (h)
2 Credits Offered As Demand Warrants
Continuation of JPN F310 Intermediate Kanji. Students will learn to read and write additional 1000 kanji (Chinese characters) through studying their history, composition and artistic value. ***Prerequisites: JPN F310.*** (2+0)

JPN F330 **Classical Japanese Literature** (h)
3 Credits Offered As Demand Warrants
A survey of the major works and genres of Japanese prose and poetry from the 8th to 18th centuries including Heian tales (monogatari), medieval folk tales and military chronicles, and the playful literature of the Edo period.

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Major emphases include the Tale of Genji, the Tale of the Heike and mastering the conventions that continue to be both adapted and subverted in modern Japanese literature. Course is taught in English. ***Prerequisites: Junior standing or permission of instructor.*** (3+0)

JPN F331 W **Women's Voices in Japanese Literature** (h)
3 Credits
A close reading of selected novels, short stories, poems, and diaries by Japanese women from the tenth century to the present which reveal the personal, social, aesthetic and intellectual concerns of women in different periods of Japanese history. Focus on the changing role of women in Japanese society, the role of women writers as social critics, and cross-cultural differences and similarities in women's issues. ***Prerequisites: ENGL F111X; ENGL F211X or F213X or permission of instructor; ENGL/FL F200X. Recommended: HIST F121 or HIST F122 or HIST F331.*** Cross-listed with WGS F331. (3+0)

JPN F332 **Japanese Cultural Traditions and Arts** (h)
3 Credits Offered Fall Even-numbered Years
A study of Japanese cultural traditions and arts as influenced by the religious and philosophical systems of Shinto, Buddhism, Confucianism and Taoism. Lectures will cover a wide range of Japanese traditional arts such as tea ceremony, calligraphy, martial arts, Noh, Bunraku, and Kabuki. Course is taught in English. ***Prerequisites: Junior standing or permission of instructor.*** (3+0)

JPN F333 **Twentieth Century Japanese Prose Fiction**
3 Credits Offered Spring Odd-numbered Years
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. Note: Course may be repeated for credit when topic varies. ***Prerequisites: Junior standing or permission of instructor.*** (3+0)

JPN F431 **Studies in Japanese Culture** (h)
3 Credits Offered Fall
Further study of advanced written and spoken Japanese through essays, newspaper and journal articles, and television documentaries dealing with topics in Japanese culture. Note: Course may be repeated for credit when topic varies. ***Prerequisites: JPN F302 or permission of instructor.*** (3+0)

JPN F432 **Studies in Japanese Language** (h)
3 Credits Offered Spring
In-depth study of Japanese language or literature. Course may be repeated for credit when topics vary. ***Prerequisites: JPN F302 or permission of instructor.*** (3+0)

JPN F475 **Seminar on Contemporary Japan** (h)
3 Credits Offered As Demand Warrants
Ties together various threads of the Japanese studies program and gives students an opportunity to apply their knowledge to contemporary issues in Japan. Provides a forum for student presentations of research papers begun in Japan. ***Prerequisites: Upper-division semester in Japan at pre-approved program.*** (3+0)

JPN F482 **Selected Topics in Japanese** (h)
3 Credits Offered As Demand Warrants
Focuses on topics not covered in JPN F431 or JPN F432. May be repeated for credit. ***Prerequisites: JPN F302 or equivalent; junior standing; or permission of instructor.*** (3+0)

JPN F488 **Individual Study: Senior Project** (h)
3 Credits Offered As Demand Warrants
Designed to permit the student to demonstrate ability to work with the language and the culture through the analysis and presentation, in Japanese, of a problem chosen by the student in consultation with the department. Offered normally in the semester preceding the student's graduation. Conducted in Japanese. Note: The student must apply for senior project and submit project outline by the end of the sixth week of the semester preceding the semester of graduation. ***Prerequisites: At least 10 credits in upper-division Japanese or permission of instructor.*** (3+0+1)

JOURNALISM

JRN F101 **Introduction to Mass Communications** (h)
3 Credits Offered Fall
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. (3+0)

JRN F102 **Introduction to Broadcasting** (h)
3 Credits Offered As Demand Warrants
Principles of broadcasting as they relate to the people of the United States, including history, government involvement and social effects. Also available via Independent Learning. (3+0)

JRN F105 **History of the Cinema** (h)
3 Credits
History and development of the medium of film in the United States and abroad during the last 100 years. Content will vary each semester. Cross-listed with FLM F105. (3+0)

JRN F202 **News Writing for the Media** (h)
3 Credits
Identifying and focusing news stories, writing the lead, developing story structure, writing on deadline, editing copy, writing headlines and captions, writing styles for print, broadcast and online news presentations. Special fees apply. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** (3+0)

JRN F203 **Basic Photography** (h)
3 Credits
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. Special fees apply. (2+3)

JRN F204 **Digital Basic Photography** (h)
3 Credits
Introduction to the technical and aesthetic aspects of basic digital photography via digital SLR cameras and editing through digital photo suites such as Adobe Photoshop. Students are expected to have intermediate computer knowledge. Topics include controlling digital SLRs on manual settings, photographing creatively, basic and advanced editing techniques, negative scanning and digital printing. Special fees apply. (3+0)

JRN F215 **Radio Production**
3 Credits Offered Fall
Sound production techniques for radio and television. Emphasis on writing, recording, control room techniques and editing. Special fees apply. (2+3)

JRN F217 **Introduction to the Study of Film** (h)
3 Credits Offered Spring
An appreciation course designed to introduce the student to the various forms of cinematic art with special emphasis on humanistic and artistic aspects. ***Prerequisites: ENGL F111X.*** Cross-listed with ENGL F217; FLM F217. (2+2)

JRN F220 **Adobe Photoshop**
3 Credits Offered Fall
Create images that go beyond traditional photo editing and into the realm of painting with depth color manipulation. Includes use of a computer, scanner, analog images and digital camera. Includes ethical and copyright issues of

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photography manipulation. ***Prerequisites: JRN F250. Recommended: Advanced knowledge of Macintosh operating system.*** (3+0)

JRN F240 **Foreign Corresponding** (h)
3 Credits Offered Spring
The U.S. tradition of "objective" journalism holds sway in very few countries. How did these varying approaches develop, and what do they mean for how Americans report overseas and how foreign journalists report about us? (3+0)

JRN F250 **Web Site Design**
3 Credits Offered Fall
Create web-site projects. Includes the Internet, design, multimedia and the incorporation of text, sound, images, animation and video. Special fees apply. ***Prerequisites: Familiarity with the World Wide Web, Internet browsers, the Macintosh operating systems, and image editing software; or permission of instructor.*** (3+0)

JRN F251 **Television Production**
4 Credits Offered Fall
Television studio production, floor directing, audio, camera, staging, lighting and switching. Special fees apply. Cross-listed with FLM F251. (2+5)

JRN F280 **Video Storytelling** (h)
3 Credits Offered Fall
Basics of digital video production technology, composition, audio, lighting and editing as it relates to primarily nonfiction filmmaking. Students will conclude the course by producing their own short videos. Special fees apply. Cross-listed with FLM F280. (3+0)

JRN F290 **Digital Video Editing**
3 Credits Offered As Demand Warrants
Introduction to the technical and aesthetic aspects of non-linear digital video editing. Students will go from little or no experience in non-linear editing to being comfortable with some of the advanced editing techniques. Address motion picture editing theories that are not bound to time or specific editing technology. Special fees apply. Cross-listed with FLM F290. (3+0)

JRN F300 **Internship**
1-3 Credits
Practical experience working with campus media, individual media-related projects for business or media, or in a professional media environment. ***Prerequisites: JRN F202 or permission of instructor.*** (1+6)

JRN F305 **Snedden Chair Lectures**
3 Credits Offered Fall
Rotating series of lectures and seminars with America's leading journalists on topics ranging from war reporting to covering sports. Please contact Department of Journalism for current topic and instructor. Course may be repeated for credit. Special fees apply. ***Prerequisites: Junior standing or permission of instructor.*** (3+0)

JRN F308 **Film Criticism** (h)
3 Credits
Theoretical approaches to viewing, analyzing and evaluating film and television program content. Note: Available via Independent Learning only. Cross-listed with FLM F308. (3+0)

JRN F311 W **Magazine Article Writing** (h)
3 Credits Offered Fall
Learn to identify great article ideas, turn them into finished products and pitch them to magazine editors. Workshops and extensive instructor feedback. Students repeating the course limited to six credits. Also available via Independent Learning. Special fees apply. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; JRN F202; or permission of instructor.*** (3+0)

JRN F323 **Editing for Journalists**
3 Credits Offered Spring
Tricks of the trade, including copyediting; writing headlines and captions; basic page design using computers; and thinking like the editor-in-chief. Special fees apply. ***Prerequisites: JRN F202 or permission of instructor; junior standing.*** (3+0)

JRN F324 **Typography and Publication Design**
3 Credits Offered Spring
Typography, layout and design, coupled with a study of the methods of printing production. Special fees apply. ***Prerequisites: Permission of instructor.*** (2+2)

JRN F347 O **Lighting Design** (h)
3 Credits Offered Fall Even-numbered Years
Principles and techniques of theatrical lighting design. The student will conduct practical experiments and design projects applying the experience gained from the experiments. Also available via Independent Learning. ***Prerequisites: COMM F131X or COMM F141X; THR F343; or permission of instructor. May be taken concurrently with THR F343.*** Cross-listed with ART F347; THR F347. (3+0)

JRN F368 **Topics in American Film History** (s)
3 Credits Offered As Demand Warrants
American film and how it shapes and warps popular perceptions of America's past. A historical contrast according to Hollywood with the views and interpretations of historians. Content will vary depending on the specific genre or period of focus, such as World War II, the Vietnam War, the Great Depression, the Cold War and development of the west, etc. Course may be repeated for credit when content varies. ***Prerequisites: HIST F131 or HIST F132; JRN F217 or JRN F308; or permission of instructor.*** Cross-listed with HIST F368. (3+0)

JRN F371 O **Digital Photography and Pixel Painting**
3 Credits
An introduction to the world of digital imaging with applications in fine and commercial art. It is expected that students will become competent in creating convincing images of impossible subjects as well as detecting their creation by others. The varied ethical issues engendered by this expertise will be addressed in depth. Students will be required to gain proficiency in visual design for electronic and print publication. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; Macintosh OS or Windows OS experience with graphic applications; one college level studio art course.*** Cross-listed with ART F371; FLM F371. (1+4)

JRN F380 O **Women, Minorities and the Media** (h)
3 Credits Offered Fall
Examination of how women and minorities are portrayed in the mass media, the employment of women and minorities in the media, as well as how accurately the media reflects our society demographically. Presented from a feminist, multi-culturalist perspective using a broad feminist analysis encompassing issues of gender as well as class, race, age and sexual orientation. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; junior standing.*** Cross-listed with WGS F380. (3+0)

JRN F390 **New Media Toolkit** (h)
3 Credits Offered As Demand Warrants
Focus on the content and technology needed in today's newsrooms. Students will explore blogging and its place in journalism, basic audio production, digital photography, multimedia package production, and the latest Web 2.0 technologies. History of "new media" and its place in the changing journalism landscape will also be discussed. Special fees apply. ***Prerequisites: ENGL F111X or ENGL F213X; JRN F202; or permission of instructor.*** (2.5+0.5)

JRN F400 **Professional Media Internship**
1-3 Credits
Practical training in a supervised, professional media environment. Participation at an approved publication, TV or radio station, or other media-related business or non-profit organization is required. ***Prerequisites: Senior standing or permission of instructor.*** (1+6)

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JRN F401 **Beat Reporting**
3 Credits Offered Fall
Intensive training in developing and covering a news beat (chosen by the student) and the basics of common news beats: police, courts and government. Includes cultivating sources, explaining complicated stories, reporting trends, improving interviewing techniques, and employing advanced writing skills. Writing for publication encouraged. Special fees apply. ***Prerequisites: JRN F202.*** (2+2)

JRN F402 **Advanced Photography** (h)
3 Credits Offered Fall
Continuation of JRN F203. Emphasis on continuing development of photographic skills by application of basic technical skills to a variety of areas of photography. Special fees apply. ***Prerequisites: JRN F203 or instructor permission.*** (2+3)

JRN F404 **Photojournalism I** (h)
3 Credits Offered Fall
Fundamentals of visual communication through photography; issues and techniques of modern photojournalism; news, features, sports, and photo essay assignments as encountered at a daily newspaper; preparation of photographs for publication. Students must have basic 35mm camera equipment. Special fees apply. ***Prerequisites: JRN F203 or instructor permission.*** (2+3)

JRN F405 **Advanced Photography Seminar**
3 Credits Offered Spring Odd-numbered Years
Advanced discussion of photojournalism and photographic topics. Topics range from the photographic essay to the history of photography and working in series. Weekly classroom meetings supplemented by field, studio and darkroom sessions. Special fees apply. ***Prerequisites: JRN F402; JRN F404; or permission of instructor.*** Stacked with JRN F605. (2+3)

JRN F406 **Photojournalism II**
3 Credits Offered Spring Even-numbered Years
Continuation of Photojournalism I. Emphasis on developing skills in photo essay and documentary photography, and working as a freelance photojournalist. Seminar-style class includes work with film and digital equipment. Special fees apply. ***Prerequisites: JRN F404.*** (2+2)

JRN F407 **Ink Jet Printing**
3 Credits Offered Fall
Learn to make ink jet prints from various photographic sources, including digital capture and scanned film. Emphasis on applying Photoshop methods for making fine prints in black and white and color. Special fees apply. ***Prerequisite: JRN F203 or permission of instructor.*** (2.5+2)

JRN F408 **Media Management**
3 Credits Offered As Demand Warrants
Overview of media 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: Junior standing or permission of instructor.*** (3+0)

JRN F411 W **Writing for a Living**
3 Credits Offered As Demand Warrants
Writing advanced prose for publication in books or magazines. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; JRN F311; or permission of instructor.*** (3+0)

JRN F413 **Mass Media Law and Regulation** (s)
3 Credits Offered Fall
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. Also available via Independent Learning. ***Prerequisites: JRN F202 or permission of instructor.*** (3+0)

JRN F421 **Journalism in Perspective** (h)
3 Credits Offered Fall
Seminar-style exploration of the ethical, financial, corporate and international trends tugging at American journalism. ***Prerequisites: Junior standing.*** (3+0)

JRN F440 **Ethics and Reporting in the Far North**
3 Credits Offered As Demand Warrants
Historical overview of media coverage of the northern frontier with focus on journalistic ethics. Comparison made to media climate in third world countries. Special fees apply. Stacked with JRN F640; NORS F640. (3+0)

JRN F444 W **Investigative Reporting** (h)
3 Credits Offered Spring
Advanced reporting of news with emphasis on public affairs. Develops sophisticated news judgment, writing and investigative reporting skills for print and electronic media. Special fees apply. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; JRN F202; JRN F401; junior standing; or permission of instructor.*** (2+2)

JRN F451 O **Television Production**
4 Credits
Television studio production, floor directing, audio, camera, staging, lighting and switching. Special fees apply. ***Prerequisites: JRN 215; COMM F131X or COMM F141X; or permission of instructor.*** (2+5)

JRN F452 W **Radio and Television News Writing**
3 Credits Offered Spring
Overview of radio and television news writing. Emphasis on intensive news writing practice, including interviewing techniques, ethical issues and current controversies, and structure of television and radio news operations. Special fees apply. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; JRN F202.*** (3+0)

JRN F453 O **Television News Reporting**
3 Credits Offered Spring
Electronic news gathering using videotape equipment, scriptwriting, location sound recording, interview techniques, editing, videography and other aspects of field news reporting. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; JRN F451; JRN F452. JRN F452 may be taken concurrently with JRN F453.*** (2+2)

JRN F454 **Advanced TV News Production**
3 Credits Offered Fall
In-depth experience with television news production including electronic newsgathering. Emphasis on producing broadcast quality news footage and packages. May be repeated once. Only the first 3 credits count toward major approved-elective requirements. Special fees apply. ***Prerequisites: JRN F251; JRN F452; JRN F453.*** (1+6)

JRN F456 W **Science Writing for Magazines and Newspapers** (h)
3 Credits Offered As Demand Warrants
Students write and analyze science articles aimed at the general public. Course work includes writing and reading assignments, class workshops and conferences with the instructor. Emphasis on recognizing, finding and developing science stories; structuring articles; capturing reader interest; maintaining accuracy; and getting published. Scientists are welcome, but science background is not necessary. Repeatable once for additional credit with permission of instructor. Special fees apply. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; JRN F202; or permission of instructor.*** Stacked with JRN F656. (3+0)

JRN F460 **History of German Film** (h)
3 Credits Offered As Demand Warrants
In-depth study of a representative selection of films from the 1920's to the present, taught in English and German (films will be in German with English subtitles). Students of German will have a special discussion session in German and will do reading and writing in German. ***Prerequisites: Junior standing or permission of instructor.*** Cross-listed with GER F460. (3+0)

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JRN F471 O **Advanced Digital Design** (h)
3 Credits Offered Spring
Project-oriented class in graphic design with applications from journalism to fine and commercial art. Students will be expected to have a background in programs likely to include web design, digital photography and graphic design. May be repeated for credit with permission of instructor. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; JRN F250; JRN F350; ART/JRN F371; one college level studio art course.*** Cross-listed with ART F471. (1+4)

JRN F472 O **Visualization and Animation** (h)
3 Credits Offered Spring
An introduction to visualization and animation with applications in fine and commercial art and science. Students will produce a series of three dimensional animation projects which will introduce them to the tools and concepts used by animation and visualization professionals. Note: May be repeated for credit. Special fees apply. ***Prerequisites: ART F471 or equivalent; COMM F131X or COMM F141X; plus UNIX experience.*** Cross-listed with ART F472; FLM F472. (1+4)

JRN F480 **Documentary Filmmaking** (h)
3 Credits Offered Spring
Basics of hands-on documentary filmmaking techniques, including preproduction, production and postproduction. Different documentary filmmaking directing styles and the process of distributing a documentary. Each student will produce a short documentary as the capstone of the course. Special fees apply. ***Prerequisites: Basic experience in shooting and editing video or permission of instructor.*** Cross-listed with: FLM F480. (3+0)

JRN F484 **Multimedia Theory and Practice** (h)
3 Credits Offered Spring
Study of techniques needed to produce multimedia with a special project for a university or community agency as the required final. For the purpose of this course, multimedia is defined as computer-based, user-driven products with audio, visual and text components and also video or film where appropriate. Primary program is Flash. Special fees apply. ***Prerequisites: Understanding of computer graphics programs like Illustrator, Freehand, etc. plus some mastery of a specialty like writing, art or television production.*** Cross-listed with ART F484. Stacked with ART F684; JRN F684. (2+3)

JRN F490 **Online Publication: "Extreme Alaska"**
3 Credits
Using the department's multimedia newsroom facilities, senior-level students work on a team, under the guidance of an instructor, to publish an online publication. Students are expected to show substantial initiative and creativity as they make use of the skills they have acquired in other journalism courses. Course may be repeated once for credit. Special fees apply. ***Prerequisites: JRN F202; senior standing; or permission of instructor.*** (2+2)

JRN F601 **Communication Research Methodologies: Social Science**
3 Credits
Introduction to the range of methodologies used to produce both practical and theoretic knowledge in the discipline. Presents the relationships between scientific questions, appropriate selection of methodology and types of knowledge products. Note: COMM/JRN F601 is a required core course for the M.A. in Professional Communication. Cross-listed with COMM F601. (3+0)

JRN F605 **Advanced Photography Seminar**
3 Credits Offered Spring Odd-numbered Years
Advanced discussion of photojournalism and photographic topics with field, studio, and darkroom sessions. Topics will range from the photographic essay to the history of photography and working in series. Weekly classroom meeting will be supplemented by field, studio, and darkroom sessions. Special fees apply. ***Prerequisites: JRN F402; JRN F404; or permission of instructor.*** Stacked with JRN F405. (2+3)

JRN F611 **Advanced Writing for Publication**
3 Credits Offered As Demand Warrants
An intensive writing course focused on producing books and in-depth magazine features. Emphasis will be on writing, editing and research. The business and legal aspects of becoming an author will also be covered. Special fees apply. ***Prerequisites: JRN F202 or comparable upper-division ENGL courses; graduate standing; or permission of instructor.*** (3+3)

JRN F613 **Advanced Mass Media Law and Regulation**
3 Credits Offered As Demand Warrants
Seminar on current issues, legal opinions and legislative actions which directly affect the mass media. Special emphasis on technological evolution, corporate growth and deregulation of administrative media law. ***Prerequisites: Graduate standing.*** (3+0)

JRN F625 **Communication Theory**
3 Credits Offered Fall
Required course for the M.A. in Professional Communication. The course is designed to acquaint students with both the historical evolution of the discipline against the backdrop of the evolution of the social sciences and with the theoretical perspectives of knowledge-building that have marked that disciplinary evolution. Students will learn the contextual interconnectedness of philosophy and theory. Finally, Communication Theory will also make the essential connections between theoretical perspectives and their professional uses. Cross-listed with COMM F625. (3+0)

JRN F633 **Public Relations Theory and Practice**
3 Credits Offered As Demand Warrants
Theory, practice and research in public relations. Emphasis on public relations in business, industry, government institutions and nonprofit organizations, as well as the role of public relations in American mass media. ***Prerequisites: Graduate standing.*** (3+0)

JRN F640 **Ethics and Reporting in the Far North**
3 Credits Offered As Demand Warrants
Historical overview of media coverage of the northern frontier with focus on journalistic ethics. Comparison made to media climate in third world countries. Cross-listed with NORS F640. Stacked with JRN F440. (3+0)

JRN F641 **Comparative Media Studies**
3 Credits Offered As Demand Warrants
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. ***Prerequisites: Graduate standing.*** (3+0)

JRN F656 **Science Writing for Magazines and Newspapers**
3 Credits Offered As Demand Warrants
Students write and analyze science articles aimed at the general public. Course work includes writing and reading assignments, class workshops and conferences with the instructor. Emphasis on recognizing, finding and developing science stories; structuring articles; capturing reader interest; maintaining accuracy; and getting published. Scientists are welcome, but science background is not necessary. Repeatable once for additional credit with permission of instructor. Special fees apply. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with JRN F456. (3+0)

JRN F661 **Mentored Teaching in Journalism**
1 Credit Offered As Demand Warrants
Mentored teaching provides consistent contact on course-related issues between teaching assistants and mentoring faculty. May be repeated up to four times for credit.Note: Teaching assistants are required to be enrolled in a mentored teaching section while teaching. ***Prerequisites: Admission to M.A. in Professional Communications; journalism track teaching assistantship award.*** (1+0+2)

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JRN F684 **Multimedia Theory and Practice**
3 Credits Offered Spring
Study of techniques needed to produce multimedia with a special project for some university or community agency as the required final. For the purpose of this course multimedia is defined as computer-based, user-driven products with audio, visual and text components and also video or film where appropriate. Primary program is Flash. Special fees apply. ***Prerequisites: Understanding of computer graphics [programs like Illustrator, Freehand, etc.] plus some mastery of a specialty like writing, art, or television production.*** Cross-listed with ART F684. Stacked with: ART F484; JRN F484. (3+3)

JRN F685 **Publishing, Production and Theory**
3 Credits
Writing, editing and production techniques for high school publication. Topics: desktop publishing, basic and electronic photography, advertising management and legal liabilities. Examination of value of First Amendment to a democratic government. Requires access to a computer. UA computer network provides network to other teachers. ***Prerequisites: Certified teacher or permission of instructor.*** (3+0)

JUSTICE

JUST F110 **Introduction to Justice** (s)
3 Credits
Survey of the structure and process of the agencies of criminal justice. Includes introduction to criminology, criminal law, police, courts and corrections. Also available via Independent Learning. (3+0)

JUST F125 **Introduction to Addictive Processes**
3 Credits
Focus on gaining knowledge of the psycho-social aspects of addiction. Historic and behavioral approaches, disease concept and current trends relating to addiction presented. Twelve step and self-help approaches explored. Cross-listed with HUMS F125. (3+0)

JUST F222 **Research Methods** (s)
3 Credits Offered Fall
Application of social science research methods to solving scientific and nonscientific questions arising in justice or political science. Basic methods include statistical analysis, survey research, and Internet applications. ***Prerequisites: JUST F110.*** (3+0)

JUST F251 **Criminology** (s)
3 Credits Offered Spring
The study of the major areas of deviant behavior and its relationship to society, law and law enforcement, including the theories of crime causation. ***Prerequisites: JUST F110.*** (3+0)

JUST F300X **Ethics and Justice** (h)
3 Credits
An examination of ethical and moral concepts, and their relationship to criminal justice issues. Applies ethics theories to the criminal justice institutions of police, courts and corrections. Examines ethical and moral dilemmas which confront crime control policy makers. ***Prerequisites: Junior standing.*** (3+0)

JUST F310 **Principles of Corrections** (s)
3 Credits Offered Spring Even-numbered Years
An introduction to adult institutions, community- based programs, and theories of incarceration. Correctional programs are examined. ***Prerequisites: JUST F110; junior standing.*** (3+0)

JUST F320 **Practicum**
1-6 Credits
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 six credits. ***Prerequisites: JUST F110; junior standing.*** (1-6+0)

JUST F335 W **Gender and Crime**
3 Credits Offered Spring
An exploration of gender and crime including the extent of female crime, victimization, masculinity and violence, and women professionals in the justice system. ***Prerequisites: JUST F110; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; junior standing.*** Cross-listed with WGS F335. (3+0)

JUST F340 **Rural Justice in Alaska** (s)
3 Credits Offered Fall
Application of the western justice system to remote northern Native villages including issues arising from cultural conflicts, difficulties associated with a centralized justice system serving distant roadless communities, the federal/Indian relationship, and a description of crime occurring in the villages. ***Prerequisites: JUST F110; junior standing.*** (3+0)

JUST F345 W **Police Problems**
3 Credits Offered Fall
Analysis of the nature of coercive power and the special problems faced by people who assume the responsibility of coercing others; how coercive power affects personality and how personality affects the way different types of people respond to the challenge and responsibilities of using coercive means; conditions that discourage excessive use of coercive means and encourage police officers to develop in morally and politically mature ways. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; JUST F110; junior standing.*** (3+0)

JUST F352 **Criminal Law**
3 Credits
A study of elements, purposes and functions of the substantive criminal law with emphasis upon historical and philosophical concepts. ***Prerequisites: JUST F110; junior standing.*** (3+0)

JUST F354 **Procedural Law**
3 Credits Offered Fall
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. ***Prerequisites: ENGL F111X; JUST F110; junior standing.*** (3+0)

JUST F358 **Juvenile Delinquency** (s)
3 Credits Offered Fall
Theories of delinquency, the extent of delinquency, the historical development of juvenile justice, the juvenile system, and how it impacts on youth in relation to police, courts, institutions and community programs. Includes youth violence, gangs, gender, race and class. ***Prerequisites: JUST F110; JUST F251; or permission of instructor.*** (3+0)

JUST F404 **Introduction to Legal Research and Writing**
3 Credits Offered Spring
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 F101 or JUST F110; PS F303; junior standing; permission of instructor.*** Cross-listed with PS F404. (3+0)

JUST F452 **Comparative Criminology** (s)
3 Credits Offered Spring Even-numbered Years
An issue-based approach to crime within selected countries including such topics as restorative justice, violence against women, drugs, punishment, juvenile justice and the death penalty. The structure and operation of justice systems, as well as the influence of culture, will be considered in regard to various developed and underdeveloped nations. ***Prerequisites: JUST F110; junior standing.*** (3+0)

JUST F454 W **Advanced Problems in Procedural Law**
3 Credits Offered Spring
Advanced study of the elements of criminal procedural law. Emphasis on the legal limitations of the police and the right of people to be secure from the government under protections of the U.S. Constitution and "rules of evidence." ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; JUST F110; JUST F354; junior standing; or permission of instructor.*** (3+0)

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JUST F460 O **American Crime Control** (s)
3 Credits Offered Fall
Major concepts of the structure and process of criminal justice revisited with emphasis on current issues. ***Prerequisites: COMM F131X or COMM F141X; JUST F110; JUST F222; JUST F251; senior standing; Justice major.*** (3+0)

JUST F475 **Internship**
3-9 Credits
Supervised work experience in criminal justice agencies. ***Prerequisites: Permission of director of intern program. Note: Department approval required for 9 credits.*** (3-9+0)

JUST F492 **Seminar**
1-6 Credits
Various topics of current interest and importance to the justice major will be presented. Topics will be announced prior to each offering. ***Prerequisites: JUST F110; junior standing; permission of instructor.*** (1-6+0)

JUST F605 **Administration and Management of Criminal Justice Organizations**
3 Credits Offered Fall
A comprehensive overview of management and administration of criminal justice agencies with an emphasis on organizational behavior. Included is the study of management theories, leadership roles, and the development of human resources within the organizational context. This course will be offered over the Internet. Note: Offered via the Internet. ***Prerequisites: Admission to the M.A. degree program in Justice. Recommended: B.A. or B.S. in relevant area.*** (3+0+6)

JUST F610 **Ethics in Criminal Justice Management**
3 Credits Offered as Demand Warrants
Confronting ethical situations that may arise in the management of criminal justice organizations. Examination of the ethical and moral foundations of our current criminal justice system to help make decisions in keeping with the goals of justice. Note: Offered via the Internet. ***Prerequisites: Admission to the M.A. degree program in Justice. Recommended: B.A. or B.S. in relevant area.*** (3+0+6)

JUST F615 **Justice Program Planning/ Evaluation and Grant Writing**
3 Credits Offered Spring
Program planning and evaluation. Includes grant proposal writing with emphasis on federal sources of grant funding. Note: Offered via the Internet. ***Prerequisites: Admission to M.A. in Justice program. Recommended: B.A. or B.S. in relevant area.*** (3+0+6)

JUST F620 **Personnel Management in Criminal Justice**
3 Credits Offered as Demand Warrants
Foundation for effective management of personnel in criminal justice by supervisors. Includes recruiting, selection, training, on-site supervision, termination and replacement of subordinates. Note: Offered via the Internet. ***Prerequisites: Admission to M.A. in Justice program. Recommended: B.A. or B.S. degree in relevant area.*** (3+0+6)

JUST F625 **Legal Aspect of Criminal Justice Management**
3 Credits Offered Spring
A basic understanding of legal issues faced by criminal justice managers and administrators. Included is a study of the legal considerations surrounding recruitment and hiring practices, sexual harassment, the Age Discrimination in Employment Act, the Americans with Disabilities Act and the Fair Labor Standards Act. The course will be offered via the Internet. ***Prerequisites: Admissions to the M.A. in Justice program. Recommended: B.A. or B.S. in relevant area.*** (3+0+6)

JUST F630 **Media Relations and Public Relations**
3 Credits Offered As Demand Warrants
Understanding the role of the media in modern society and how to effectively represent an organization to the media. Includes First Amendment and Freedom of Information Act case law and administrative decisions involving the broadcast media. The primary focus is upon preparing justice administrators to effectively meet their legal obligations with regard to dissemination of information to the media and the public. Note: Offered via the Internet. ***Prerequisites: Admission to M.A. in Justice program. Recommended: B.A. or B.S. in relevant area.*** (3+0+6)

JUST F640 **Community/Restorative Justice**
3 Credits Offered Fall
Using community resources to address public safety concerns. Includes recent developments and an emerging awareness that public safety solutions can be achieved efficiently by cooperative efforts between justice agencies and community resources. Note: Offered via the Internet. ***Prerequisites: Admission to M.A. in Justice program. Recommended: B.A. or B.S. in relevant area.*** (3+0+6)

JUST F650 **Analysis Techniques for the Criminal Justice Administrator**
3 Credits Offered As Demand Warrants
Common techniques used to analyze numerical data commonly found occurring in small to large agencies. Emphasis on issues of data quality such as reliability and validity, methods of graphical presentation, inferential techniques, forecasting models, sampling techniques and computer analysis programs such as Statistical Programs for the Social Sciences (SPSS). Note: Web-based course with contact over discussion board and email. ***Prerequisites: JUST F605; and admission to M.A. in Justice program.*** (3+0)

JUST F670 **Seminar in the Administration of Juvenile Justice**
3 Credits Offered Spring
Legal and administrative aspects of the juvenile justice system. Emphasis will be placed on developing an applied knowledge regarding the administration of juvenile justice within the legal framework. Includes hypothetical situations in an effort to enhance the ability to apply theoretical concepts to real life situations. Note: Offered via the Internet. ***Prerequisites: JUST F605; admission to M.A. in Justice program.*** (3+0+6)

JUST F690 **Seminar in Critical Issues and Criminal Justice Policy**
3 Credits Offered As Demand Warrants
This seminar will be the only course actually requiring a student to attend on the UAF Campus. The Seminar will last for one week and the student will be required to attend sessions 8 hours a day. Topics of current interest. Candidates in standing for the M.A. degree in Justice will a make presentations. Attendance is required on the UAF campus. Note: Offered via the Internet. ***Prerequisites: Admissions to M.A. in Justice program. Recommended: B.A. or B.S. in relevant area.*** (3+0+6)

LATIN

LAT F101 **Beginning Latin I** (h)
3 Credits
Introduction to ancient Latin language and Roman culture, development of competence through reading original authors with emphasis on vocabulary, recognition and correct use of grammar. Does not satisfy core curriculum requirement. Note: Offered via the Center for Distance Education. (3+0)

LAT F102 **Beginning Latin II** (h)
3 Credits
Continuation of the introduction to ancient Latin language and Roman culture, development of competence through reading original authors with emphasis on vocabulary, recognition and correct use of grammar. Does not satisfy core curriculum requirement. Note: Offered via the Center for Distance Education. ***Prerequisites: LAT F101.*** (3+0)

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LAT F201 **Intermediate Latin I** (h)
3 Credits
Continuation of LAT F102. Increasing development of competence through reading original authors with growing emphasis on grammar usage and vocabulary. Does not satisfy core curriculum requirement. Note: Offered via the Center for Distance Education. ***Prerequisites: First year college Latin, or a functional equivalent.*** (3+0)

LAT F202 **Intermediate Latin II** (h)
3 Credits
Continuation of LAT F201. Increasing development of competence through reading original authors with growing emphasis on grammar usage and vocabulary. Does not satisfy core curriculum requirement. Note: Offered via the Center for Distance Education. ***Prerequisites: LAT F201 or equivalent.*** (3+0)

LAW ENFORCEMENT

LE F110 **Cultural and Behavioral Strategies for Law Enforcement Officers**
1 Credit Offered As Demand Warrants
Introduction to a number of behavioral strategies to facilitate interaction among various cultures to be found in Alaska. It also gives the student a strong concept of police ethics as it relates to everyday performance of police duties. The student receives an introduction to problems and strategies for law enforcement officers in their relationships to their marriages and families. Special fees apply. ***Special Conditions: Students must meet basic Police Standards qualifications for police officers.*** (1+0)

LE F115 **Enforcement Skills for Law Enforcement Officers**
3 Credits Offered As Demand Warrants
Introduction to the basic skills necessary to use firearms (both pistol and shotgun), operate a motor vehicle under emergency conditions and use Oleo Capsicum (pepper) spray effectively. A continuum on the use of force, judgment in the use of deadly force, physical defense tactics and physical arrest. Special fees apply. ***Special Conditions: Students must meet basic Police Standards qualifications for police officers.*** (2+8)

LE F120 **Law Enforcement Operations**
4 Credits Offered As Demand Warrants
Preparation to conduct specific investigations into auto theft, domestic violence events, DUI detection, juvenile procedures, care of the emotionally disturbed, report writing and jail procedures. Special fees apply. ***Special Conditions: Students must meet basic Police Standards qualifications for police officers.*** (3+3)

LE F125 **Basic Police Procedures**
4 Credits Offered As Demand Warrants
Introduction to conducting investigations, using approved methods, at any major crime scene. Specific skills are presented for use in the investigation of sexual assaults, homicides, arson, gang related activity and death investigations. Skills are taught in: interview and interrogation, crime scene physical collection, hostage situations, scene investigation and mapping. Introduction to the danger of blood-bourne pathogens and protective measures. Special fees apply. ***Special Conditions: Students must meet basic Police Standards qualifications for police officers.*** (3+3)

LE F205 **Criminal Law for Police**
4 Credits Offered As Demand Warrants
Introduction to the more complex issues of criminal law. The Alaska Statutes, constitutional law and court decisions as well as traffic law, search and seizure, rights of defendants and warrant procedures. Special fees apply. ***Special Conditions: Students must meet basic Police Standards qualifications for police officers.*** (4+0)

LEADERSHIP

LEAD F305 **Leadership Alaska: Making a Difference** (s)
4 Credits Offered Spring
A leadership seminar and practicum which will involve building community, developing networks, learning leadership theories, understanding civic responsibility, and creating an action through which the student becomes a leader. ***Prerequisites: Either be an Alaska Scholar; an Honors student; a member of the National Society of Collegiate Scholars; have a 3.25 GPA; or permission of instructor.*** (4+0)

LEAD F456 **Leadership and Influence During Crisis**
3 Credits Offered As Demand Warrants
This course focuses on the challenges faced by those who serve as leaders during crisis and emergency circumstances. During emergency circumstances, leading others, being able to influence and motivate them during crisis is critical. Topics including leadership and followership, crisis decision making, fear and emotion and the unique circumstances of an emergency manager/homeland security professional are examined. ***Prerequisites: HSEM F301 or permission of instructor.*** Cross listed with HSEM F456. (3+0)

LIBERAL ARTS AND SCIENCE

LAS F410 W,O/2 **Scientific Research**
3 Credits Offered As Demand Warrants
Formulation and testing of hypotheses using field observation and experimentation. Includes collection of data, analysis using spreadsheets and statistical software, and oral/written presentation. Focus on individual and group participation in ongoing field or laboratory projects in the natural sciences. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; junior or senior standing as a major in the B.A.S. degree program.*** (2+3)

LAS F601 **Responsible Conduct of Research**
2 Credits
Maintaining the public trust and respect of fellow scientists requires a clear understanding of the basic principles under which research is conducted and reported. Introduces students to the basic principles and expectations that form the foundation of research integrity. Students will learn to recognize and address ethical dilemmas in research scenarios, thus preparing them for situations that will invariably arise during their career. This course fulfills National Science Foundation and National Institutes of Health requirements. ***Prerequisites: Senior undergraduate or graduate student standing. Interested post-doctoral fellows and other with terminal degrees are also invited to enroll with permission of instructor.*** (2+0)

LIBRARY SCIENCE

LS F100X **Library and Information Strategies**
1 Credit Offered Fall
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. Also available via Independent Learning. (1+0)

LS F101X **Library Information and Research**
1 Credit
Introduction to effective library research methods and principles of information organization and retrieval. Emphasis on applied experience with finding and evaluating information, especially through use of library catalogs, journal indexes and Internet resources. Also available via Independent Learning. (1+0)

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LS F487 **Alaska Research Resources**
2 Credits Offered Spring
Find, use and evaluate primary sources in the Alaska and Polar Regions Department of the Rasmuson library and over the Internet. Student pursues own topics and findings may be used to support research in other courses. Stacked with NORS F687. (2+0)

LINGUISTICS

LING F100 **Language, Education, Linguistics** (h)
3 Credits Offered Spring
Introduction to the field of linguistics as it pertains to the field of education. Includes discussions of language structure, acquisition and bilingualism, and variation and public policy. The course does not satisfy requirements for the B.A. in Linguistics. Cross-listed with ED F100. (3+0)

LING F101 **Nature of Language** (h)
3 Credits Offered Fall
The study of language: systematic analysis of human language and description of its grammatical structure, distribution and diversity. Also available via Independent Learning. (3+0)

LING F216 **Languages of the World** (h)
3 Credits Offered As Demand Warrants
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. (3+0)

LING F303 W,O **Language Acquisition**
3 Credits Offered As Demand Warrants
Theories of the acquisition and development of first and second languages, including consideration of biological and sociocultural factors. Survey of traditional and contemporary theories, and implications for pedagogy and public policy. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor. Recommended: LING F101.*** Cross-listed with ED F303. (3+0)

LING F308 W,O **Language and Gender** (s)
3 Credits Offered Fall Odd-numbered Years
Examination of relationships between language and gender, drawing on both ethnographic and linguistic sources. Topics include power, socialization and sexism. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** Cross-listed with ANTH F308; WGS F308. (3+0)

LING F318 **Introduction to Phonetics and Phonology** (h)
3 Credits Offered Spring
Scientific study of human speech sounds, mechanism of their production, and sound systems of languages. ***Prerequisites: Upper-division standing or permission of instructor.*** (3+0)

LING F320 **Introduction to Morphology** (h)
3 Credits Offered Fall Odd-numbered Years
Study of principles and processes of word construction in language. Morphological structure of Alaska Native languages and other non-Indo-European languages. ***Prerequisites: LING F318 or permission of instructor.*** (3+0)

LING F402 **Second Language Acquisition**
3 Credits Offered Fall
Central issues in second language acquisition research. Includes a critical review of SLA theories and research. ***Prerequisites: LING F101 or permission of instructor.*** (3+0)

LING F410 O **Theory and Methods of Second Language Teaching**
3 Credits Offered Fall Even-numbered Years
Theory and methods of teaching a second language, including various pedagogical approaches, overview of second language acquisition theory, discussion of materials and testing. ***Prerequisites: COMM F131X or COMM F141X.*** (3+0)

LING F420 **Semantics** (h)
3 Credits Offered Spring Even-numbered Years
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. ***Prerequisites: LING F101 or permission of instructor.*** Stacked with LING F620. (3+0)

LING F430 **Historical Linguistics** (h)
3 Credits Offered Fall Even-numbered Years
Introduction to comparative and historical linguistics: methods of linguistic reconstruction, historical change, genetic relationships, dialectology. Includes Indo-European and Alaskan languages. ***Prerequisites: LING F318.*** Stacked with LING F630. (3+0)

LING F431 **Field Methods in Descriptive Linguistics I**
3 Credits Offered Spring Odd-numbered Years
Introduction to general issues in language field work and to issues specific to working with little studied and/or endangered languages in particular. Focus on introduction to writing systems, making recordings, computers and transcriptions, planning consultant sessions, working with consultants, interviewing and ethics in the field. Projects include making transcriptions of familiar language, and later, working on an unfamiliar language with a language consultant, selecting and carrying out a well- defined project, resulting in a term paper. ***Prerequisites: LING F318; LING F320; or permission of instructor.*** Cross-listed with ANTH F432. Stacked with ANTH F632; LING F631. (3+0)

LING F434 **Field Methods in Descriptive Linguistics II**
3 Credits Offered Fall Odd-numbered Years
Second semester of Field Methods sequence. Plan linguistic field project, including field trip, caring for equipment, data handling, community contacts, intellectual property, and repatriation. Course work includes lectures and group elicitation with a speaker of a non-Indo-European language. Projects may involve either the traditional field work involving finding and working with a consultant, or work involving research of archival materials on languages no longer spoken. ***Prerequisites: ANTH F432 or LING F431.*** Cross-listed with ANTH F434. Stacked with ANTH F634; LING F634. (3+0)

LING F440 W **Aspects of Bilingualism** (h)
3 Credits Offered As Demand Warrants
Cognitive, linguistic, sociopolitical and educational aspects of bilingualism at both the individual and societal levels, including factors contributing to language maintenance and language shift. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; LING F101; or permission of instructor.*** (3+0)

LING F450 O **Language Policy and Planning** (s)
3 Credits Offered Fall Even-numbered Years
Consideration of minority languages, including Alaskan Native Languages, in light of their histories, current status and factors affecting future maintenance. ***Prerequisites: COMM F131X or COMM F141X.*** Stacked with LING F650. (3+0)

LING F482 **Seminar in Linguistics**
3 Credits Offered Spring Odd-numbered Years
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. (3+0)

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LING F600 Research Methods for Applied Linguistics
3 Credits Offered Spring
Review of quantitative and qualitative research paradigms, data gathering techniques and analytical tools (questionnaires, surveys, observations, testing) used in the study of applied linguistics. Topics will include ethical issues in human subjects research, how to conduct a literature review, how to conduct classroom-based research. ***Prerequisites: Graduate standing.*** (3+0)

LING F601 Principles of Linguistic Analysis
3 Credits Offered Fall
Provides experience in working with various languages to determine systematic principles of transcribing and organizing sounds; isolating morphemes; categorizing words into semantic categories; and understanding narrative and other rhetorical structures. For students whose specialty is other than linguistics who could benefit from a graduate-level introduction to linguistic methods. (3+0)

LING F602 Second Language Acquisition
3 Credits Offered Fall
Central issues in second language acquisition research. Includes a critical review of SLA theories and research. ***Prerequisites: LING F101 or LING F601; graduate standing; or permission of instructor.*** (3+0)

LING F603 Phonetics and Phonology
3 Credits
Scientific approach to the study of human speech sounds and the mechanism of their production (phonetics), as well as the exploration of the fundamental concepts of the sound systems of languages (phonology) and theories which allow for the analysis of real language data. (3+0)

LING F604 Morphology and Syntax
3 Credits Offered Fall Even-numbered Years
The study of how meaning is encoded in words in languages of the world. Morphological and morphophonemic processes, lexical categories, derivation and inflection, productivity, tense, aspect, mode, case, concord, valence changes, morphological typologies. Similarities and differences among languages in the grammatical devices used to signal relations between nouns and verbs, negation, comparison, attribution. ***Prerequisites: LING F101 or LING F601; graduate standing; or permission of instructor.*** (3+0)

LING F610 Theory and Methods of Second Language Teaching
3 Credits Offered Spring
Theory and practice of teaching a second language, including methodological approaches, second language acquisition theory, materials, and testing. (3+0)

LING F611 Second Language Curriculum and Materials Development
3 Credits Offered Fall Even-numbered Years
Exploration/discussion of theoretical perspectives in Second Language curriculum and materials development. Emphasis on the interconnectivity of materials, syllabus, curriculum and learning. As a result of this course, students will be able to choose, adapt and construct a variety of language teaching materials and understand the ramifications of syllabus and curriculum design. ***Prerequisites: LING F602; LING F610. Recommended: LING F601.*** (3+0)

LING F612 Assessment for the Second Language Classroom
3 Credits Offered Spring Odd-numbered Years
Exploration/discussion of theoretical perspectives in second language assessment, practical considerations in creating language tests, and statistical methods used for analyzing test data. As a result of this course, students will be able to choose, adapt and construct a variety of language assessments for classroom and institutional purposes as well as evaluate the validity of existing assessments. ***Prerequisites: LING F602; LING F610. Recommended: LING F601.*** (3+0)

LING F620 Semantics
3 Credits Offered Spring Even-numbered Years
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. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with LING F420. (3+0)

LING F621 Cultural Aspects of Language Acquisition
3 Credits
An expended view of the ways in which individuals become socialized into particular patterns of first and second language and literacy. The ongoing acquisition of both oral and written language(s) from early childhood through adult life. Topics will include the cultural dimensions of language development, the relationship between communication and culture, bilingualism and the role of language in the transmission of sociocultural knowledge. Cross-listed with ED F621. (3+0)

LING F627 Introduction to Linguistic Description and Documentation
3 Credits Offered Fall Even-numbered Years
General introduction to lexicography, field phonetics, grammatical documentation, investigation of narrative, other levels of linguistic documentation, the distinction between description and documentation, and differences in structure and method between pedagogical and academic materials resulting from field work. ***Prerequisites: LING F601 or equivalent; demonstrated background in phonology and morphology; or permission of instructor.*** (3+0)

LING F630 Historical Linguistics
3 Credits Offered Spring Even-numbered Years
Introduction to comparative and historical linguistics: methods of linguistic reconstruction, historical change, genetic relationships, dialectology. Includes Indo-European and Alaskan languages. ***Prerequisites: LING F318.*** Stacked with LING F430. (3+0)

LING F631 Field Methods in Descriptive Linguistics I
3 Credits Offered Spring Odd-numbered Years
Introduction to general issues in language field work and to issues specific to working with little studied and/or endangered languages in particular. Focus on introduction to writing systems, making recordings, computers and transcriptions, planning consultant sessions, working with consultants, interviewing, and ethics in the field. Projects include making transcriptions of familiar language, and later, working on an unfamiliar language with a language consultant, selecting and carrying out a well- defined project, resulting in a term paper. ***Prerequisites: LING F627 or permission of instructor.*** Cross-listed with ANTH F632. Stacked with ANTH F432; LING F431. (3+0)

LING F634 Field Methods in Descriptive Linguistics II
3 Credits Offered Fall Odd-numbered Years
Second semester of Field Methods sequence. Plan linguistic field project, including field trip, caring for equipment, data handling, community contacts, intellectual property and repatriation. Course work includes lectures and group elicitation with a speaker of a non-Indo-European language. Projects may involve either traditional field work involving finding and working with a consultant, or work involving research of archival materials on languages no longer spoken. ***Prerequisites: ANTH F632 or LING F631.*** Cross-listed with ANTH F634. Stacked with ANTH F434; LING F434. (3+0)

LING F650 Language Policy and Planning
3 Credits Offered Fall Odd-numbered Years
Consideration of minority languages, including Alaska Native Languages, in light of their histories, current status, and factors affecting future maintenance. Stacked with LING F450. (3+0)

LING F651 Topics in Athabascan Linguistics
3 Credits Offered Fall Even-numbered Years
Graduate level introduction to important topics in Athabascan linguistics, including both foundational literature and current research. Topics may

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include laryngeal features; tonogenesis; syntax-morphology interface; argument structure; lexical semantics; and discourse. Course may be repeated once. ***Prerequisites: LING F601 or equivalent; graduate standing. Recommended: LING F603; LING F604.*** Cross-listed with ANL F651. (3+0)

LING F652 Linguistics Applications
3 Credits
In-depth investigation of linguistic problems in selected languages. Includes phonological, morphological, syntactic and semantic issues. Students will produce a grammatical sketch of a chosen language. ***Prerequisites: LING F318; LING F320; LING F601; or relevant course work.*** (3+0)

LING F660 Internship
3 Credits Offered Fall Even-numbered Years
Student works as an apprentice to a language teacher or a linguist doing fieldwork. Maintain a log and a portfolio of work. If teaching, goal would be to develop appropriate lesson plans and do mentored teaching. If doing fieldwork, goal would be to develop appropriate materials for teaching. ***Prerequisites: LING F603; LING F604; ANTH F632 or LING F610.*** (3+0)

MARINE SCIENCE AND LIMNOLOGY

MSL F111X The Oceans (n)
4 Credits
Study of the oceans from the broad perspective offered by combining insights from biology, physics, chemistry and geology. Topics include the evolution of the oceans and marine life, forces acting on water and the resulting currents and waves, and relationships between the physics and chemistry of water bodies and their biological productivity. Societal questions related to fisheries management, global climate change and pollution will be discussed. Special fees apply. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (3+3)

MSL F211 Introduction to Marine Science I
3 Credits Offered Fall
This is the first part of a two semester sequence in Marine Science: MSL F211, F212, F213 (Lab). This course introduces students to the geology, chemistry and physics of the ocean as well as related topics in the cryosphere and climate. Students will gain a basic understanding of the interconnections between the ocean and atmosphere, and the oceans and the solid earth (the continents and sea floor). ***Prerequisites: Math F107. May be taken concurrently.*** (3+0)

MSL F212 Introduction to Marine Science II
3 Credits Offered spring
This course explores the diversity of marine life, from microbes to mammals, and the interactions of marine organisms with each other and with their environment. Topics include primary productivity, marine food webs, physiological adaptations, and ecology of marine habitats from coastal to deep-sea systems. Students will also be introduced to current topics in marine and fisheries research. ***Prerequisites: MSL F211*** (3+0)

MSL F213L Marine Science Laboratory
1 Credit Offered spring
Introductory laboratory course designed to accompany MSL F211-F212 series. Laboratory activities will provide students with hands-on experience to cement topics covered in lectures (MSL F211-F212). Activities include exploration of physical and chemical properties of seawater; geologic and biological classification and introduction to tools for oceanographic data visualization. ***Prerequisites: MSL F212 or concurrent enrollment*** (0+3)

MSL F220 Scientific Diving
2 Credits Offered Spring
Introduction to cold water diving and SCUBA techniques used in the research community. Includes familiarization with Alaska subtidal flora and fauna. Opportunity to work underwater and assist with diving projects conducted by MSL F421 students at the Kasitsna Bay Marine Lab during spring break. Completion of this course will allow students to be eligible to join the UAF (AAUS) dive program and to dive on the UAF sanctioned diving projects and have reciprocity to dive with other universities and other government agencies. Through this course, students also can be certified with a Research Diver Specialty (PADI) and a Dry Suit Specialty (PADI). CPR, First Aid (Red Cross), and Emergency Oxygen Administration (DAN) are offered through this course. Graded Pass/Fail. Special fees apply. ***Prerequisites: Basic biology/ecology courses, SCUBA (open water) certification. Special Conditions: Must have current SCUBA physical approved.*** (1+1+8)

MSL F411 Current Topics in Oceanographic Research
3 Credits
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 F100-level or above or permission of instructor.*** (3+0)

MSL F421 Field Course in Subtidal Studies
2 Credits Offered Spring
Students will propose a hypothesis and experimentally test it during a one-week field trip to the Kasitsna Bay Lab. Prior to field trip, students will develop a proposal, dive plan and materials list in relation to their project. Undergraduates will present their findings in an oral presentation to the class while graduate students will present theirs in a public seminar and produce a conference-ready poster. Special fees apply. ***Prerequisites: MSL F420, basic biology/ecology courses, SCUBA (open water) certification. Special Conditions: Must have a current SCUBA physical approved.*** Stacked with MSL F623. (1+1+8)

MSL F431 Polar Marine Science
3 Credits Offered Fall Even-numbered Years
Physical, biological, chemical and geological oceanography of the polar oceans with emphasis on comparing and contrasting the Arctic and Antarctic. ***Prerequisites: MSL F111; or graduate standing.*** (3+0)

MSL F435 Acoustical Oceanography
3 Credits
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.*** (3+0)

MSL F450 Marine Biology and Ecology Field Course
4 Credits Offered Summer Odd-numbered Years; As Demand Warrants
Advanced understanding of marine organisms in an ecological and evolutionary context through field and laboratory work at the Kasitsna Bay Marine Lab. Includes collection of marine macroalgae, invertebrates and plankton and relating their anatomical organization to habitat, lifestyle and ecology. Emphasis on familiarization with Alaska's nearshore flora and fauna, the ecological function of organisms and ecosystem dynamics. Includes employing different field sampling techniques and experimental designs in various habitats found around the Kasitsna Bay Marine Lab, e.g. rocky intertidal, open water, mudflats, seagrass beds and salt marshes. ***Prerequisites: One year of biology and permission of instructor. Recommended: Basic courses in ecology and invertebrate zoology.*** Stacked with MSL F651. (3+6)

MSL F456 Kelp Forest Ecology
4 Credits Offered Summer Even-numbered Years; As Demand Warrants
Introduction to knowledge, hypotheses and disputes regarding components of nearshore tidal communities and the ecological interactions that influence their structure and dynamics. Includes primary published literature in marine subtidal ecology, and local Alaska subtidal flora and fauna. Work underwater conducting ecological research. Includes formulating questions,

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collecting and analyzing ecological data, report writing and feedback. Special fees apply. ***Prerequisites: UAF Science Diver certification.*** Stacked with MSL F656. (28+35)

MSL F460 Marine Studies for Science Teachers
1-3 Credits
Field studies in oceanography and marine biology emphasizing a hands-on approach to scientific observation, data collection and analysis. Small boat and beach excursions. Students may enroll for one, two, or three weeks at 1 credit per week. Two additional credits may be earned by students concurrently enrolled in MSL F498 and completing their own investigative research project. Course offered at the Kasitsna Bay Laboratory. Special fees apply. ***Prerequisites: B.S. or B.A. degree; college-level science background; or permission of instructor(s).*** (1-3+0)

MSL F467 Introduction to Marine Macroalgae (n)
3 Credits Offered As Demand Warrants
Introduction to marine macroalgae. Algal structure, function and ecology, basic knowledge of the major phyla, key and press algae, and local Alaska flora. Includes a four to five day field trip to Kasitsna Bay Marine Laboratory. Special fees apply. ***Prerequisites: Upper-division standing in a natural science for undergraduates or graduate standing.*** Stacked with MSL F667. (2+3)

MSL F601 Professional Development
1 Credit Offered Fall
Improve ability to make oral and poster presentations and to write resumes and cover letters. Includes lectures, discussions, and four individual projects. Students are encouraged to use their thesis/dissertation material for the posters and oral presentations. Feedback on all projects will be given by both instructor and students. ***Recommended: Graduate status.*** (1+0)

MSL F602 Proposal Writing
1 Credit Offered Fall; As Demand Warrants
Familiarize students with the proposal writing process. Writing proposals is a common requirement during graduate school and will be continuing during the career as a scientists and researcher. This class aims to cover some common rules about good proposal writing. Students will be required to write a proposal and to give feedback to 1-2 proposals of classmates. Graded Pass/Fail. ***Recommended: Graduate status.*** (1+0)

MSL F604 Modern Applied Statistics for Fisheries
4 Credits Offered Odd-numbered Years
Covers general statistical approaches to quantitative problems in marine science and fisheries with guidance on how to collect and organize data, how to select appropriate statistical methods and how to communicate results. A variety of advanced statistical methods for analyzing environmental data sets will be illustrated in theory and practice. ***Prerequisites: STAT F200; STAT F401; proficiency in computing with R or permission of instructor.*** Cross-listed with: FISH F604. (3+3)

MSL F605 Controversies in Marine Science
1 Credit Offered Spring Even-Numbered Years
Introduction to the idea that science is fluid and controversies and disagreements do occur. These disagreements are often published in the primary literature. This course will be a discussion/debate of various controversial topics in marine science. Graded Pass/Fail. ***Recommended: Graduate status.*** (1+0)

MSL F610 Marine Biology
3 Credits Offered Spring
Biology of the major plant and animal groups in the sea and their roles in pelagic and benthic systems. Physical, chemical and geological features affecting marine organisms and the role of bacteria in the sea. The basic biology and adaptations of selected species of zooplankton and nekton. The benthos-shore biota, shelf and deep-sea organisms: basic biology, trophic roles and adaptations of selected species. ***Prerequisites: Degree in biology or permission of instructor. Recommended: Courses in invertebrate zoology, ichthyology, and vertebrate zoology.*** (3+0)

MSL F612 Early Life-histories of Marine Invertebrates
3 Credits Offered Fall Odd-numbered Years
This course will explore the diversity of reproductive strategies and larval forms in marine invertebrates, and consider selective pressures governing the evolution of these forms. Topics include: larval ecology and evolution, environmental constraints on early life-histories, reproductive biology, population dynamics, sources of larval mortality, dispersal and recruitment. Graduate standing or instructor permission and invertebrate zoology recommended. (3+0)

MSL F615 Physiology of Marine Organisms
3 Credits
A study of the physiological systems of and adaptation to the marine environment, intertidal, pelagic, and deep benthos environment and energy flows will be discussed. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

MSL F619 Biology of Marine Mammals
3 Credits Offered As Demand Warrants
Introduction to a broad range of research and conservation topics associated with marine mammals. Topics include physiological adaptations, phylogeny and evolution, behavior, ecology, population dynamics and conservation. ***Prerequisites: Graduate standing; or upper-division ecology and biology courses.*** (3+0)

MSL F620 Physical Oceanography
4 Credits Offered Fall
Physical description of the sea, physical properties of seawater, methods and measurements, boundary processes, currents, tides and waves, and regional oceanography. ***Prerequisites: Math F202X; PHYS F103X or PHYS F211X; science or engineering degree; or permission of instructor.*** (3+3)

MSL F621 Polar Marine Science
3 Credits Offered Fall Even-numbered Years
Physical, biological, chemical and geological oceanography of the polar oceans with emphasis on comparing and contrasting the Arctic and Antarctic. ***Prerequisites: MSL F620; or graduate standing.*** (3+0)

MSL F623 Field Course in Subtidal Studies
2 Credits Offered Spring
Students will propose a hypothesis and experimentally test it during a one-week field trip to the Kasitsna Bay Lab. Prior to field trip, students will develop a proposal, dive plan and materials list in relation to their project. Undergraduates will present their findings in an oral presentation to the class while graduate students will present theirs in a public seminar and produce a conference-ready poster. Special fees apply. ***Prerequisites: MSL F420; basic biology/ecology courses; SCUBA (open water) certification. Special Conditions: Must have a current SCUBA physical approved.*** Stacked with MSL F421. (1+1+8)

MSL F624 Oceanic-Atmospheric Gravity Waves
3 Credits Offered Spring; As Demand Warrants
Introduction to the dynamics of surface and internal gravity waves in non-rotating and rotating fluids including, derivation/solutions of the wave equation, approximations to the governing equations, particle motions and wave energetics, dispersion relationships, phase and group velocities, normal mode and WKB theory, refraction, reflection, critical layer absorption, wave instabilities. ***Prerequisites: MSL F620; MATH F302; or permission of instructor.*** Cross-listed with ATM F624. (3+0)

MSL F625 Shipboard Techniques
3 Credits Offered As Demand Warrants
Introduction to modern oceanographic shipboard sampling and analysis techniques. (2+3)

MSL F626 Continental Shelf Dynamics
3 Credits Offered As Demand Warrants
Geophysical fluid dynamic fundamentals appropriate to continental shelf circulation. Steady and time-dependent wind and buoyancy-forced flows in the

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presence of stratification and bathymetry. ***Prerequisites: MSL F620; MATH F421.*** (3+0)

MSL F627 **Statistical Computing with R**
2 Credits Offered Fall, As Demand Warrants
Using the free, open-source software R to teach computing, programming, and modeling concepts for the statistical computing of fisheries and biological data. Prepares students for other graduate-level, quantitative fisheries courses and covers exploratory statistical and graphical analyses, as well as computer-intensive methods such as bootstrapping and randomization tests. ***Prerequisites: STAT F200X or equivalent, STAT F401 or equivalent, and proficiency with Excel; or permission of instructor.*** Cross-listed with FISH F627. (1+3)

MSL F628 **Sea Ice Ecology**
1 Credit Offered As Demand Warrants
Provides students with an introduction into the physics, chemistry and biology of Arctic and Antarctic sea ice. Topics will include seasonality of sea ice extent, ice microstructure, diversity and activity of biological communities and impacts of climate change on the ice biota. ***Recommended: MSL F650.*** (1+0)

MSL F629 **Methods of Numerical Simulation in Geophysical Fluid Dynamics**
4 Credits Offered Fall Odd-numbered Years
Fundamentals of computer simulation, including time and spatial differencing and stability theory applied to partial differential equations describing dynamic processes in the ocean and atmosphere. Numerical approximation schemes for geophysical fluid dynamics will be analyzed through equations of motion, continuity and transport. Special consideration given to description of frictional processes in turbulent flow and transport/diffusion phenomena. Includes laboratory practice. ***Prerequisites: MATH F310; MATH F421; MATH F422 or equivalent; baccalaureate degree in physics, engineering, mathematics or equivalent; experience with FORTRAN.*** (3+3)

MSL F630 **Geological Oceanography**
3 Credits Offered Spring
Topography and structure of the ocean floor. Theory of plate tectonics. Geology of ocean basins, continental slope, shelf and coastal environments. Major sediment types and distributions. Sediment transport and deposition. Interaction between seawater, rock, and sediment. Paleoceanography. ***Prerequisites: Graduate standing or permission of instructor. Upper-division standing are invited to contact the instructor.*** (3+0)

MSL F631 **Data Analysis in Community Ecology**
3 Credits Offered Spring Odd-numbered years
This course will provide an overview of statistical methods that have been specifically developed to aid our understanding and interpretation of the structure, abundance, and distribution of species and communities in relation to resources and the environment. ***Prerequisites: STAT F200; STAT F401 or equivalent; FISH 693 (Stat Comp. with R) or familiarity with R, General Ecology, Graduate standing in Fisheries or permission of instructor.*** Cross-listed with FISH F631. (3+0)

MSL F640 **Fisheries Oceanography**
4 Credits Offered Fall Odd-numbered Years
Oceanography of marine processes affecting commercially important fisheries (finfish and shellfish) and species that affect them. Interactions between fisheries resources and physical, biological, geological and chemical oceanography, as well as climatological and meteorological conditions. Topics include recruitment, transport, natural mortality, predator-prey relationships, competition, distribution and abundance. El Niño/La Niña, regime shifts, and climate change. Emphasis on early life history of fishes. Examples from fisheries and ecosystems worldwide are used. ***Prerequisites: MSL F620; MSL F650; or permission of instructor. Recommended: FISH F400.*** (4+0)

MSL F650 **Biological Oceanography**
3 Credits Offered Fall
Survey of biological processes emphasizing organic matter synthesis and transfer including topics essential to a basic understanding of contemporary biological oceanography. Primary and secondary production, standing stocks, distribution, and structure and dynamics of phytoplankton and zooplankton populations. The transfer of organic matter to higher trophic levels and food webs. Nutrient cycling, especially but not exclusively nitrogen, phosphorus and silicon, microbiological processes relevant to nutrient cycling. Heterotrophic production, benthic communities coastal ecosystems, the influence of organisms on the composition of seawater, particularly with reference to oxygen and carbon dioxide regimes. Aspects of regional oceanography. ***Prerequisites: Upper-division standing in a science major.*** (3+0)

MSL F651 **Marine Biology and Ecology Field Course**
4 Credits Offered Summer Odd-numbered Years; As Demand Warrants
Advanced understanding of marine organisms in an ecological and evolutionary context through field and laboratory work at the Kasitsna Bay Marine Lab (Kachemak Bay). Includes collection of marine macroalgae, invertebrates and plankton and relating their anatomical organization to habitat, lifestyle and ecology. Emphasis will be on familiarization with Alaska's nearshore flora and fauna, the ecological function of organisms and ecosystem dynamics. Students will employ different field sampling techniques and experimental designs in various habitats found around the Kasitsna Bay Marine Lab, e.g. rocky intertidal, open water, mudflats, seagrass beds, and salt marshes. Graduate students will perform a research project related to the course subject matter. ***Prerequisites: One year of biology; graduate standing; permission of instructor. Recommended: Basic courses in ecology and invertebrate zoology.*** Stacked with MSL F450. (3+6)

MSL F652 **Marine Ecosystems**
3 Credits Offered Spring Even-numbered Years
Understanding ecosystems of the sea in the context of evaluating the impact of human activities. Focus on current concepts, trends and perspectives. ***Prerequisites: BIOL F472; MSL F620; MSL F650; or permission of instructor.*** (3+0)

MSL F653J **Zooplankton Ecology**
3 Credits Offered Fall Odd-numbered Years
Survey of marine zooplankton including processes and variables which influence their production and dynamics. Emphasis on the northeast Pacific ocean zooplankton community. Field and lab methods for sampling include fixing, preserving, subsampling, identifying and quantifying zooplankton collections. Laboratory techniques for culture of zooplankton include physiological measurements of bioenergetic parameters. Course is taught in Juneau. ***Prerequisites: Invertebrate zoology course, MSL F610, or permission of instructor.*** Cross-listed with FISH F653J. (3+0)

MSL F654 **Benthic Ecology**
3 Credits Offered Spring Odd-numbered Years
Ecology of marine benthos, from subtidal to hadal zone. Methods of collecting, sorting, narcotizing, preserving and analyzing bethnic assemblages, including video analytical techniques from submersibles and ROV's. Hydrothermal vent and cold seep assemblages. Physiology/energetics of benthic organisms, including animal-sediment relationships, feeding, reproduction and growth. Depth, spatial and latitudinal distribution patterns. ***Prerequisites: Invertebrate zoology course, marine biology course, or permission of instructor.*** (3+0)

MSL F654J **Benthic Ecology**
3 Credits Offered Spring Odd-numbered Years
Ecology of marine benthos, from subtidal to hadal zones. Methods of collecting, sorting, narcotizing, preserving and analyzing benthic assemblages, including video analytical techniques from submersibles and ROV's. Hydrothermal vent and cold seep assemblages. Physiology/energetics of benthic organisms, including animal-sediment relationships, feeding, reproduction and growth. Depth, spatial and latitudinal distribution patterns. ***Prerequisites: Invertebrate zoology course; marine biology course; or permission of instructor.*** Cross-listed with FISH F654J. (3+0)

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MSL F655 **Phytoplankton Ecology, from Form to Function**
2 Credits Offered Spring Even-numbered Years
Introduction to the diversity and functioning of aquatic (marine and limnic) phytoplankton taxa in a wide sense. Topics will include various adaptations to the environment (life cycles, physiology). Four lab sessions will intensify the understanding of the covered topics and give students hands-on experience in analyzing phytoplankton samples on algal diversity and activity using modern techniques (fluorescence microscopy, flow cytometry, PAM fluorometry). ***Recommended: Biological oceanography and/or graduate courses in algal ecology and aquatic ecosystems.*** (1+2)

MSL F656 **Kelp Forest Ecology**
4 Credits Offered Summer Even-numbered Years; As Demand Warrants
Introduction to knowledge, hypotheses and disputes regarding components of nearshore tidal communities and the ecological interactions that influence their structure and dynamics. Includes primary published literature in marine subtidal ecology, and local Alaska subtidal flora and fauna. Work underwater conducting ecological research. Includes formulating questions, collecting and analyzing ecological data, report writing and feedback. Special fees apply. ***Prerequisites: UAF Science Diver certification.*** Stacked with MSL F456. (28+35)

MSL F660 **Chemical Oceanography**
3 Credits Offered Spring
The chemical, biological and physical processes that determine the distribution of chemical variables in the sea. The distribution of stable and radioisotopes are used to follow complex chemical cycles, with particular emphasis on the cycles of nutrient elements. The chemistry of carbon is considered in detail. Implications of the mid-ocean ridge vent system to ocean chemistry are examined. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with CHEM F660. (3+0)

MSL F661 **Stable Isotope Techniques in Environmental Research**
3 Credits Offered Spring Even-numbered Years
An examination of the use of added or naturally occurring isotope tracers in ecological studies. Demonstration of equipment and modern techniques. ***Prerequisites: MSL F660 or permission of instructor.*** (3+0)

MSL F667 **Introduction to Marine Macroalgae**
3 Credits Offered As Demand Warrants
Introduction to marine macroalgae. Includes algal structure, function and ecology, basic knowledge of the major phyla, key and press algae and local Alaska flora. Includes a four to five day field trip to Kasitsna Bay Marine Laboratory. Special fees apply. ***Prerequisites: Upper-division standing in a natural science for undergraduates or graduate standing.*** Stacked with MSL F467. (2+3)

MSL F670 **Nutrient Dynamics**
2 Credits Offered Fall Odd-numbered Years
The dynamics of nitrogen, phosphorus and silicon cycles of the world oceans and the specific processes which transfer nutrients between ecosystems compartments. Analytical techniques employed in measurement of nutrient transfer rates. ***Prerequisites: MSL F650 or MSL F660 or permission of instructor.*** (2+0)

MSL F680 **Marine Sustainability Internship**
2 Credits Offered Fall
Internship program in marine ecosystem sustainability to broaden students' interdisciplinary training, develop new research tools, build expertise outside their home discipline, gain exposure to careers, and gain a unique perspective on research problems. Internships are for a minimum of 8 weeks and take place during the summer. In the autumn students report on and meet to discuss their internship experiences. ***Prerequisites: MSL F652 or permission of instructor.*** Cross-listed with FISH F680, NRM F680 and ANTH F680. (0+0+5-16)

MATHEMATICS

Developmental Mathematics

DEVM F050 **Prealgebra**
3 Credits
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. ***Prerequisites: Appropriate placement test scores.*** (3+0)

DEVM F051 **Math Skills Review**
1 Credit Offered As Demand Warrants
Develops and reviews basic mathematical terminology, theory and operations as outlined by the Alaska State Mathematics Standards. Mathematics topics focus on reviewing the six basic "strands" of mathematical content: numeration, measurement, estimation and computation, function and relationship, geometry, and statistics and probability. Approaches to problem solving will emphasize the process of mathematical thinking, communication and reasoning. It is an appropriate course for those preparing for the High School Qualifying Exam in Alaska or those needing a review of basic math skills in preparation for a math placement test at UAF. May be repeated for a total of three credits. Graded Pass/Fail. (1+0)

DEVM F056 **Math Fast Track: Prealgebra/Elementary Algebra Review**
1 Credit Offered 3 times per year: Augustmester, Wintermester, Maymester
A 20-hour intensive review of math concepts offered prior to each semester. Covers prealgebra and elementary algebra topics to prepare qualified students to potentially improve their math course placement. Students should have a history of being successful in equivalent levels of math, although they may not recall enough information to place well on the placement test. Students who are successful in this class have the possibility of advancing through one or two semesters of development math. Graded Pass/Fail. ***Prerequisites: Placement into DEVM F050 or DEVM F060.*** (1+0)

DEVM F060 **Elementary Algebra**
3 Credits
First year high school algebra. Evaluating and simplifying algebraic expressions, solving first degree equations and inequalities, integer exponents, polynomials, factoring, rational expressions, equations and graphs of lines. Also available via Independent Learning. ***Prerequisites: Grade of C or better in DEVM F050; or ABUS F155, or appropriate placement test scores. Prerequisite courses and/or placement exams must be taken within one calendar year prior to commencement of the course.*** (3+0)

DEVM F061 **Review of Elementary Algebra**
1 Credit
Designed to assist students in reviewing material covered by DEVM F060. Individuals who have not previously taken an elementary algebra course are recommended to enroll in DEVM F060. Available via Independent Learning only. (1+0)

DEVM F062 **Alternative Approaches to Math: Elementary Algebra**
3 Credits
Algebraic topics. Includes operations with polynomial expressions, first- and second-degree equations, graphing, integral and relational exponents, and radicals using alternative teaching styles. ***Prerequisites: Grade of C or better in DEVM F050; or ABUS F155; or appropriate placement test scores. Prerequisite courses and/or placement exams must be taken within one calendar year prior to commencement of the course.*** (3+0)

DEVM F065 **Mathematics Skills**
1-3 Credits
Designed to assist students in reviewing and reinforcing course concepts covered by DEVM F050, DEVM F060, DEVM F062, DEVM F105 and DEVM

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F106. Consists of instruction which may include lab instruction, individual student work or group work. May be repeated. Recommended for students who need more time and help to master the material in Developmental Math courses. (1-3+0)

DEVM F066 **Advanced Math Fast Track: Elementary/ Intermediate Algebra Review**
1 Credit Offered 3 times per year: Augustmester, Wintermester, Maymester.
A 20-hour intensive review of math concepts offered prior to each semester. Covers elementary and intermediate algebra topics to prepare qualified students to potentially improve their math course placement. Students should have a history of being successful in equivalent levels of math, although they may not recall enough information to place well on the placement test. Students who are successful in this class have the possibility of advancing through one or two semesters of development math. Graded Pass/Fail. ***Prerequisites: Placement into DEVM F060 or DEVM F105 or DEVM F106.*** (1+0)

DEVM F071 **Review of Intermediate Algebra**
1 Credit
Course reviews material covered by DEVM F105. Individuals who have not taken an intermediate algebra course on the high-school level are recommended to enroll in DEVM F105. Available via Independent Learning only. (1+0)

DEVM F081 **Review of Basic Geometry**
1 Credit
High school geometry without formal proofs. Topics include basic definitions, measurement, parallel lines, triangles, polygons, circles, area, solid figures and volume. Available via Independent Learning only. ***Prerequisites: DEVM F060.*** (1+0)

DEVM F082 **Hands-On Geometry**
1 Credit
Basic concepts and uses of geometry. Emphasis on "hands-on" and applied problems. ***Prerequisites: A solid knowledge of arithmetic — no algebra required.*** (1+0)

DEVM F105 **Intermediate Algebra**
3 Credits
Second year high school algebra. Operations with rational expressions, radicals, rational exponents, logarithms, inequalities, quadratic equations, linear systems, functions, Cartesian coordinate system and graphing. To matriculate to MATH F107X from DEVM F105 a grade of B or higher is required. Also available via Independent Learning. ***Prerequisites: Grade of C or better in DEVM F060; or DEVM F062; or appropriate placement test scores. Prerequisite courses and/or placement exams must be taken within one calendar year prior to commencement of the course.*** (3+0)

DEVM F106 **Intensive Intermediate Algebra**
4 Credits
Algebraic topics. Includes exponents, radicals, graphing, systems of equations, quadratic equations and inequalities, logarithms and exponentials, and complex numbers using alternative teaching styles. Note: This course satisfies elective credit only. ***Prerequisites: Grade of C or better in DEVM F060; or DEVM F062; or DEVM F105; or appropriate placement test scores. Prerequisite courses and/or placement exams must be taken within one calendar year prior to commencement of the courses.*** (4+0)

Mathematics

MATH F103X **Concepts and Contemporary Applications of Mathematics** (m)
3 Credits
Applications of mathematics in modern society. Topics include voting systems, probability and statistics and 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. Also available via Independent Learning. ***Prerequisites: DEVM F105 or DEVM F106 or placement; or high school geometry and algebra II.*** (3+0)

MATH F107X **Functions for Calculus** (m)
4 Credits
A study of algebraic, logarithmic and exponential functions; sequences and series; conic sections; and as time allows, systems of equations, matrices and counting methods. A brief review of basic algebra in the first week prepares students for the rigor expected. The primary purpose of this course, in conjunction with MATH F108, is to prepare students for calculus. Note: Credit may be earned for taking MATH F107X or MATH F161X, but not for both. Also available via Independent Learning. ***Prerequisites: DEVM F105 with a grade of B (3.0) or higher; DEVM F106; or two years of high school algebra and MATH F107X placement or higher.*** (4.5+0)

MATH F108 **Trigonometry** (m)
2-3 Credits
A study of the trigonometric functions. Also available via Independent Learning. ***Prerequisites: MATH F107X or placement or concurrent enrollment in MATH F107X.*** (2-3+0)

MATH F161X **Algebra for Business and Economics** (m)
3 Credits
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: Credit may be earned for taking MATH F107X or MATH F161X, but not for both. ***Prerequisites: DEVM F105 or DEVM F106 or higher or two years of high school algebra and MATH F161X placement or higher.*** (3+0)

MATH F200X **Calculus I** (m)
4 Credits
Limits, including those with indeterminate form, continuity, tangents, derivatives of polynomial, exponential, logarithmic and trigonometric functions, including product, quotient and chain rules, and the mean value theorem. Applications of derivatives including graphing functions and rates of change. Antiderivatives, Newton's method, definite and indefinite integrals, methods for substitution in integrals and the fundamental theorem of calculus. Applications of integrals include areas, distances, and volumes. Note: No credit may be earned for more than one of MATH F200X, MATH F262X or MATH F272X. Also available via Independent Learning. ***Prerequisites: MATH F107X and MATH F108 or placement in MATH F200X.*** (4+1)

MATH F201X **Calculus II** (m)
4 Credits
Techniques and applications of integration. Integration of trigonometric functions, volumes including those using slicing, arc-length, integration by parts, trigonometric substitutions, partial fractions, hyperbolic functions, and improper integrals. Numeric integration including Simpson's rule, first order differential equations with applications to population dynamics and rates of decay, sequences, series, tests for convergence including comparison and alternating series tests, conditional convergence, power series, Taylor series, polar coordinates including tangent lines and areas, and conic sections. Also available via Independent Learning. ***Prerequisites: MATH F200X or placement in MATH F201X.*** (4+0)

MATH F202X **Calculus III** (m)
4 Credits
Partial derivatives and multiple integrals (double and triple). Vectors, parametric curves, motion in three dimensions, limits, continuity, chain rule, tangent planes, directional derivatives, optimization, Lagrange multipliers, integrals in polar coordinates, parametric surfaces, Jacobians, line integrals, Green's Theorem, surface integrals and Stokes' Theorem. Also available via Independent Learning. ***Prerequisites: MATH F201X.*** (4+0)

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MATH F205 **Mathematics for Elementary School Teachers I** (m)
3 Credits Offered Fall
Elementary set theory, numeration systems, and algorithms of arithmetic, divisors, multiples, integers and introduction to rational numbers. Emphasis on classroom methods. Also available via Independent Learning. ***Prerequisites: MATH F107X, MATH F161X or placement. Restricted to B.A.S. and B.A. Elementary Education degree students; others by permission of instructor.*** (3+1)

MATH F206 **Mathematics for Elementary School Teachers II** (m)
3 Credits Offered Spring
A continuation of MATH F205. Real number systems and subsystems, logic, informal geometry, metric system, probability and statistics. Emphasis on classroom methods. Also available via Independent Learning. ***Prerequisites: MATH F205.*** (3+1)

MATH F215 **Introduction to Mathematical Proofs** (m)
3 Credits Offered Spring
Emphasis on proof techniques with topics including logic, sets, cardinality, relations, functions, equivalence, induction, number theory, congruence classes and elementary counting. In addition, a rigorous treatment of topics from calculus or a selection of additional topics from discrete mathematics may be included. ***Prerequisites: MATH F200X, MATH F201X or concurrent with MATH F201X or permission of instructor.*** (3+0)

MATH F262X **Calculus for Business and Economics** (m)
4 Credits
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 F200X, MATH F262X or MATH F272X. ***Prerequisites: MATH F161X or placement.*** (4+0)

MATH F272X **Calculus for Life Sciences** (m)
3 Credits Offered Fall
Differentiation and integration with applications to the life sciences. Note: No credit may be earned for more than one of MATH F200X, MATH F262X or MATH F272X. ***Prerequisites: MATH F107X and MATH F108 or placement.*** (3+0)

MATH F301 **Topics in Mathematics**
3 Credits Offered Spring
An elective course in mathematics for majors. Topics will vary from year to year and may be drawn from mathematical biology, numerical linear algebra, graph theory, Gelois theory, logic or other areas of mathematics. May be repeated with permission of instructor for a total of nine credits. ***Prerequisites: MATH F215 or permission of instructor.*** (0+0)

MATH F302 **Differential Equations**
3 Credits
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. ***Prerequisites: MATH F202X.*** (3+0)

MATH F305 **Geometry**
3 Credits Offered Spring Even-numbered Years
Topics selected from such fields as Euclidean and non-Euclidean plane geometry, affine geometry, projective geometry, and topology. ***Prerequisites: MATH F202X and MATH F215 or permission of instructor.*** (3+0)

MATH F306 **Introduction to the History and Philosophy of Mathematics**
3 Credits Offered Spring Odd-numbered Years
Important periods of history as exemplified by such thinkers as Plato, B. Russell, D. Hilbert, L.E.J. Brouwer and K. Godel. For students of mathematics, science, history and philosophy. ***Prerequisites: MATH F202X or permission of instructor.*** (3+0)

MATH F307 **Discrete Mathematics**
3 Credits
Logic, counting, sets and functions, recurrence relations, graphs and trees. Additional topics chosen from probability theory. ***Prerequisites: MATH F201X or permission of instructor.*** Cross-listed with CS F307. (3+0)

MATH F310 **Numerical Analysis**
3 Credits Offered Fall
Direct and iterative solutions of systems of equations, interpolation, numerical differentiation and integration, numerical solutions of ordinary differential equations, and error analysis. ***Prerequisites: MATH F302 or MATH F314 or permission of instructor. Recommended: Knowledge of programming.*** (3+0)

MATH F314 **Linear Algebra**
3 Credits
Linear equations, finite dimensional vector spaces, matrices, determinants, linear transformations and characteristic values. Inner product spaces. ***Prerequisites: MATH F201X.*** (3+0)

MATH F320 **Topics in Combinatorics**
3 Credits Offered Fall Odd-numbered Years
Introduction to some fundamental ideas of combinatorics. Topics selected from such fields as enumerative combinatorics, generating functions, set systems, recurrence relations, directed graphs, matchings, Hamiltonian and Eulerian graphs, trees and graph colorings. ***Prerequisites: MATH F215 or permission of instructor.*** (3+0)

MATH F321 **Number Theory**
3 Credits Offered Fall Even-numbered Years
The theory of numbers is concerned with the properties of the integers, one of the most basic of mathematical sets. Seemingly naive questions of number theory stimulated much of the development of modern mathematics and still provide rich opportunities for investigation. Topics studied include classical ones such as primality, congruences, quadratic reciprocity and Diophantine equations, as well as more recent applications to cryptography. Additional topics such as continued fractions, elliptical curves or an introduction to analytic methods may be included. ***Prerequisites: MATH F215 or permission of instructor.*** (3+0)

MATH F371 **Probability**
3 Credits Offered Fall Even-numbered Years
Probability spaces, conditional probability, random variables, continuous and discrete distributions, expectation, moments, moment generating functions, and characteristic functions. ***Prerequisites: MATH F202X.*** (3+0)

MATH F401 W **Introduction to Real Analysis**
3 Credits Offered Fall
Completeness of the real numbers and its consequences convergence of sequences and series, limits and continuity, differentiation, the Riemann integral. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; MATH F202X; MATH F215.*** (3+0)

MATH F402 **Intermediate Real Analysis**
3 Credits Offered As Demand Warrants
Intermediate topics and applications in real analysis: metric spaces, sequences and series of functions, modes of convergence. Possible other topics include: fourier series, the stone-weierstrass theorem, the arzela-ascoli theorem. ***Prerequisites: MATH F401.*** (3+0)

MATH F404 **Topology**
3 Credits Offered Fall Even-numbered Years
Introduction to topology, set theory, open sets, compactness, connectedness, product spaces, metric spaces and continua. ***Prerequisites: MATH F202X; MATH F215. Recommended: MATH F314 and/or MATH F405.*** (3+0)

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MATH F405 W **Abstract Algebra**
3 Credits Offered Spring
Theory of groups, rings and fields. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; MATH F215; or permission of instructor. Recommended: MATH F307 and/or MATH F314.*** (3+0)

MATH F408 **Mathematical Statistics**
3 Credits Offered Spring Odd-numbered Years
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 F371; STAT F200X.*** (3+0)

MATH F412 **Differential Geometry**
3 Credits Offered Spring Odd-numbered Years
Introduction to the differential geometry of curves, surfaces, and Riemannian manifolds. Basic concepts covered include the Frenet-Serret apparatus, surfaces, first and second fundamental forms, geodesics, Gauss curvature and the Gauss-Bonnet Theorem. Time permitting, topics such as minimal surfaces, theory of hypersurfaces and/or tensor analysis may be included. ***Prerequisites: MATH F314 and MATH F401; or permission of instructor.*** (3+0)

MATH F421 **Applied Analysis**
4 Credits Offered Fall
Vector calculus, including gradient, divergence, and curl in orthogonal curvilinear coordinates, ordinary and partial differential equations and boundary value problems, and Fourier series and integrals. ***Prerequisites: MATH F302.*** (4+0)

MATH F422 **Introduction to Complex Analysis**
3 Credits Offered Spring
Complex functions including series, integrals, residues, conformal mapping and applications. May be taken independently of MATH F421. ***Prerequisites: MATH F302.*** (3+0)

MATH F430 **Topics in Mathematics**
3 Credits Offered Spring
An elective course in mathematics for majors. Topics will vary from year to year and may be drawn from mathematical biology, numerical linear algebra, graph theory, logic, or other areas of mathematics. May be repeated with permission of instructor for a total of nine credits. ***Prerequisites: MATH F215 or permission of instructor.*** (3+0)

MATH F460 **Mathematical Modeling**
3 Credits Offered Fall Odd-numbered Years
Introduction to mathematical modeling using differential or difference equations. Emphasis is on formulating models and interpreting qualitative behavior such models predict. Examples will be taken from a variety of fields, depending on the interest of the instructor. Students develop a modeling project. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; MATH F201X; or permission of instructor. Recommended: One or more of MATH F302; MATH F310; MATH F314; MATH F401; STAT F300; some programming experience.*** (3+0)

MATH F490 O **Senior Seminar**
2 Credits Offered Spring
Advanced topics selected from areas outside the usual undergraduate offerings. A substantial level of mathematical maturity is assumed. ***Prerequisites: COMM F131X or COMM F141X, at least one of MATH F401 or MATH F405, senior standing.*** (2+0)

MATH F600 **Teaching Seminar**
1 Credit
Fundamentals of teaching mathematics in a university setting. Topics may include any aspect of teaching: university regulations, class and lecture organization, testing, book selection, teaching evaluations, etc. Specific topics will vary on the basis of student and instructor interest. Individual classroom visits will also be used for class discussion. May be repeated for credit. Graded Pass/Fail. ***Prerequisites: Graduate standing.*** (1+0)

MATH F608 **Partial Differential Equations**
3 Credits Offered As Demand Warrants
First and second order differential equations, boundary value problems, and existence and uniqueness theorems. Green's functions, and principal equations of mathematical physics. ***Prerequisites: MATH F422 or permission of instructor.*** (3+0)

MATH F611 **Mathematical Physics**
3 Credits Offered Fall
Mathematical tools and theory for classical and modern physics. Core topics: Linear algebra including eigenvalues, eigenvectors and inner products in finite dimensional spaces. Infinite series. Hilbert spaces and generalized functions. Complex analysis, including Laurent series and contour methods. Applications to problems arising in physics. Selected additional topics, which may include operator and spectral theory, groups, tensor fields, hypercomplex numbers. ***Prerequisites: MATH F302; MATH F314; MATH F421; MATH F422; or permission of instructor.*** Cross-listed with PHYS F611. (3+0)

MATH F612 **Mathematical Physics**
3 Credits Offered Spring
Continuation of Mathematical Physics I; mathematical tools and theory for classical and modern physics. Core topics: classical solutions to the principal linear partial differential equations of electromagnetism, classical and quantum mechanics. Boundary value problems and Sturm-Liouville theory. Green's functions and eigenfunction expansions. Integral transforms. Orthogonal polynomials and special functions. Applications to problems arising in physics. Selected additional topics, which may include integral equations and Hilbert-Schmidt theory, perturbation methods, probability theory. ***Prerequisites: PHYS/MATH F611 or equivalent; or permission of instructor.*** Cross-listed with PHYS F612. (3+0)

MATH F615 **Applied Numerical Analysis**
3 Credits Offered Spring Odd-numbered Years
Review of numerical differentiation and integration, and the numerical solution of ordinary differential equations. Main topics to include the numerical solution of partial differential equations, curve fitting, splines, and the approximation of functions. Supplementary topics such as the numerical method of lines, the fast Fourier transform, and finite elements may be included as time permits and interest warrants. ***Prerequisites: CS F201, MATH F310, MATH F314, MATH F421, MATH F422 or permission of instructor.*** (3+0)

MATH F617 **Functional Analysis**
3 Credits Offered Spring Even-numbered Years
Study of Banach and Hilbert spaces, and continuous linear maps between them. Linear functionals and the Hahn-Banach theorem. Applications of the Baire Category theorem. Compact operators, self adjoint operators, and their spectral properties. Weak topology and its applications. ***Prerequisites: MATH F314; MATH F401 or equivalent. Recommended: MATH F422; MATH F641 or equivalent.*** (3+0)

MATH F630 **Advanced Linear Algebra**
3 Credits Offered As Demand Warrants
Vector spaces over arbitrary fields, rational and Jordan canonical forms, invariant subspace decompositions and multilinear algebra. ***Prerequisites: MATH F405; MATH F314.*** (3+0)

MATH F631 **Algebra I**
4 Credits Offered Fall Even-numbered Years
Rigorous development of groups, rings and fields. ***Prerequisites: MATH F405 or permission of instructor.*** (4+0)

MATH F632 **Algebra II**
3 Credits Offered Fall Odd-numbered Years
Advanced topics taken from group theory, category theory, ring theory, homological algebra and field theory. ***Prerequisites: MATH F631.*** (3+0)

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MATH F641 Real Analysis
4 Credits
General theory of Lebesgue measure and Lebesgue integration on the real line. Convergence properties of the integral. Introduction to the general theory of measures and integration. Differentiation, the product measures and an introduction to LP spaces. ***Prerequisites: MATH F401-F402 or permission of instructor.*** (4+0)

MATH F645 Complex Analysis
4 Credits Offered Spring Even-numbered Years
Analytic functions, power series, Cauchy integral theory, residue theorem. Basic topology of the complex plane and the structure theory of analytic functions. The Riemann mapping theorem. Infinite products. ***Prerequisites: Math F641 or permission of instructor.*** (4+0)

MATH F651 Topology
4 Credits Offered Spring Odd-numbered Years
Treatment of the fundamental topics of point-set topology. Separation axioms, product and quotient spaces, convergence via nets and filters, compactness and compactifications, paracompactness, metrization theorems, countability properties, and connectedness. Set theory as needed for examples and proof techniques. ***Prerequisites: MATH F401-F402 or MATH F404 or permission of instructor.*** (4+0)

MATH F655 Algebraic Topology
3 Credits
Fundamentals of algebraic topology with applications to topology and geometry. The fundamental group, covering spaces, axiomatic homology and singular homology. ***Prerequisites: MATH F405; MATH F401-F402; MATH F404; or permission of instructor.*** (3+0)

MATH F660 Advanced Mathematical Modeling
3 Credits Offered Spring Even-numbered Years
The mathematical formulation and analysis of problems arising in the physical, biological, or social sciences. The focus area of the course may vary, but emphasis will be given to modeling assumptions, derivation of model equations, methods of analysis, and interpretation of results for the particular applications. Examples include heat conduction problems, random walk processes, molecular evolution, perturbation theory. Students will develop a modeling project as part of the course requirements. ***Prerequisites: Permission of instructor.*** (3+0)

MATH F661 Optimization
3 Credits Offered Fall Even-numbered Years
Linear and nonlinear programming, simplex method, duality and dual simplex method, post-optimal analysis, constrained and unconstrained nonlinear programming, Kuhn-Tucker conditions. Applications to management, physical and life sciences. Computational work with the computer. ***Prerequisites: Knowledge of calculus, linear algebra, and computer programming.*** Cross-listed with CS F661. (3+0)

MATH F663 Applied Combinatorics and Graph Theory
3 Credits Offered Spring Even-numbered Years
A study of combinatorial and graphical techniques for complexity analysis including generating functions, recurrence relations, theory of counting, planar directed and undirected graphs, and applications to NP complete problems. ***Prerequisites: MATH F307 and MATH F314.*** (3+0)

MATH F665 Topics in Graduate Mathematics
3 Credits Offered As Demand Warrants
Elective courses in graduate mathematics offered by faculty on a rotating basis. Topics may include, but are not limited to, graph theory, glaciology modeling, general relativity, mathematical biology, Galois theory and numerical linear algebra. May be repeated for credit with permission of instructor. (3+0)

MECHANICAL ENGINEERING

A per semester fee for computing facilities will be assessed for one or more CEM courses. This fee is in addition to any materials fees.

ME F302 Dynamics of Machinery
4 Credits Offered Fall
Kinematics and dynamics of mechanisms. Analysis of displacements, velocities, accelerations, and forces in linkages, cams and gear systems by analytical, experimental and computer methods. Design applications. ***Prerequisites: ES F210. Co-requisite: ES F301.*** (3+3)

ME F308 Measurement and Instrumentation
3 Credits Offered Spring
Measurement theory and concepts. Includes sensors, transducers and complete measurement systems; input, output and processing of engineering parameters; telemetry, data acquisition and logging, and virtual instrument systems. Special fees apply. ***Prerequisites: ES F331.*** (2+3)

ME F313 Mechanical Engineering Thermodynamics
3 Credits Offered Spring
Continuation of ES F346 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 F346.*** (3+0)

ME F321 Industrial Processes
3 Credits Offered Fall
Manufacturing processes used in modern industry. Primary and secondary manufacturing processes, casting, hot and cold forming, machining, welding and mass and efficient product design. Special fees apply. (2+3)

ME F334 Elements of Material Science/Engineering
3 Credits Offered Spring
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. Special fees apply. ***Prerequisites: CHEM F106X and PHYS F212X.*** (2+3)

ME F401 Computer Aided Design and Manufacturing
3 Credits Offered Every Third Semester
Introduction to the principles of computer aided aided design (CAD) and computer aided manufacturing (CAM). Entry-level applications of software and hardware in solid modeling, finite element modeling, rapid prototyping, and computer numerical control. Design Project. Special fees apply. ***Prerequisites: ES F210; ES F331; ME F321.*** (1+4)

ME F402 Advanced Mechanical System Design
3 Credits Offered As Demand Warrants
Advanced analysis of two- and three-dimensional multi-body mechanical systems. Rigid body system formulation and deformable body system formulation. Application of CAE software for rigid body and large deformable body systems. ***Prerequisites: ME F302; ME F408; or permission of instructor.*** Stacked with ME F602. (3+0)

ME F403 Machine Design
3 Credits Offered Spring
Analysis and design of machine components using failure theories. Strength, life, and reliability analysis. Study of design principles and selection procedures for standard machine components. Design project. ***Prerequisites: ES F331.*** (3+0)

ME F408 Mechanical Vibrations
3 Credits Offered Fall
Response of mechanical systems to internal and external forces. Free and forced vibration, random vibration. Discrete and continuous systems. Vibration parameter measurements and stability criteria. ***Prerequisites: ES F201, ES F210, ES F301.*** (2+2)

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ME F409 **Controls**
3 Credits Offered Fall
Analysis and design of control systems. Block diagrams, transfer functions and frequency analysis. Closed loop systems and system stability. Industrial controllers and system compensation. ***Prerequisites: ES F201; ES F301.*** (2+2)

ME F414 **Thermal Systems Design**
3 Credits Offered Fall
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. ***Prerequisites: ES F341; ES F346.*** (3+0)

ME F415 W **Thermal Systems Laboratory**
3 Credits Offered Spring
Testing and evaluation of components and energy systems such as pumps, fans, engines, heat exchangers, refrigerators and heating/power plants. Special fees apply. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; ES F341; ME F313; ME F441. Co-requisite: ME F308.*** (1.5+4.5)

ME F416 **Design of Mechanical Equipment for the Petroleum Industry**
3 Credits Offered Fall
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 F341; ES F346.*** (3+0)

ME F440 **Introduction to Microfluidics**
3 Credits Offered Spring Odd-numbered Years
Overview of basic concepts and principles of fluids at the micron scale; introduction to the design and fabrication of microfluidic devices. ***Prerequisites: ES F341; PHYS F103X (for Math and non-Physics science major); PHYS F211X (for Engineering, Math and Physics major); junior standing or permission of instructor. Stacked with ME F640.*** (3+0)

ME F441 **Heat and Mass Transfer**
3 Credits Offered Fall
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. ***Prerequisites: ES F301; ES F341; ES F346.*** (3+0)

ME F450 **Theory of Flight**
3 Credits Offered Fall Even-numbered Years
Airfoil theory in subsonic flow. Performance, stability and control of aircraft. Aircraft design. ***Prerequisites: ES F346.*** (3+0)

ME F451 **Aerodynamics**
3 Credits Offered Spring Odd-numbered Years
Aerodynamics of non-lifting and lifting airfoils in incompressible irrotational flow, wings of finite span, the Navier-Stokes equations, boundary layers, numerical methods, supersonic and transonic flow past airfoils, rocket aerodynamics, rocket drag. ***Prerequisites: ES F301, ES F341, ES F346. Co-requisite: ME F313.*** (3+0)

ME F452 **Introduction to Astrodynamics**
3 Credits Offered Fall Odd-numbered Years
Geometry of the solar system, detailed analysis of two-body dynamics and introduction to artificial satellite orbits; Hohmann transfer and patched conics for lunar and interplanetary trajectories. Elements of orbit determination. ***Prerequisites: ES F208 or ES F210; and ES F301.*** (3+0)

ME F453 **Propulsion Systems**
3 Credits Offered Spring Even-numbered Years
Basic principles of propulsion: turbojet, turboprop and rocket engines. Fluid mechanics and thermodynamics of flow in nozzles, compressors, combustors and turbines. Liquid and solid propellant rockets. Heat transfer in rocket motors and nozzles. Design and testing methods for components of propulsion systems. ***Prerequisites: ES F341; ME F313.*** (3+0)

ME F458 **Energy and the Environment**
3 Credits Offered Fall Odd-Numbered Years
Overview of basic concepts of energy supply, demand, production of heat and power impacts of energy use on the environment. Extensive discussion of mitigation technologies and strategies for meeting energy needs while preserving environmental quality. ***Prerequisites: CHEM F106X; ES F346 or equivalent; MATH F201X; PHYS F211X.*** Cross-listed with ENVE F458. Stacked with ME F658; ENVE F658. (3+0)

ME F464 **Corrosion Engineering**
3 Credits Offered Spring
Principles and forms of corrosion and factors that affect it. Methods of testing and measurement, control and prevention are examined. ***Prerequisites: ME F334.*** (3+0)

ME F487 W,O **Design Project**
3 Credits Offered Spring
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. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; ME F441; senior standing. Co-requisite: ME F403.*** (3+0)

ME F601 **Finite Element Analysis in Engineering**
3 Credits Offered Every Third Semester
Formulation of the finite element method. Applications to problems of engineering in solid mechanics, fluid mechanics and heat transfer. Use and development of codes for computer solution of problems. ***Prerequisites: Graduate standing in engineering; ES F201; MATH F302 or equivalent.*** (3+0)

ME F602 **Advanced Mechanical System Design**
3 Credits Offered As Demand Warrants
Advanced analysis of two- and three-dimensional multi-body mechanical systems. Rigid body system formulation and deformable body system formulation. Application of CAE software for rigid body and large deformable body systems. ***Prerequisites: ME F302; ME F408; or permission of instructor.*** Stacked with ME F402. (3+0)

ME F604 **Experimental Mechanics**
3 Credits Offered As Demand Warrants
Theory and application of the methods of experimental mechanics. Primary emphasis on photoelasticity, strain gages and brittle coating. Methods of collecting and processing data, and calculation of stresses and strains from such data. ***Prerequisites: Graduate standing in engineering.*** (2+3)

ME F608 **Advanced Dynamics**
3 Credits Offered Every Third Semester
Kinematics and kinetics of rigid bodies, introduction to analytical mechanics, Lagrange's equations and Hamiltonian mechanics. Applications to engineering problems. ***Prerequisites: ES F210; MATH F302 or equivalent; graduate standing in engineering.*** (3+0)

ME F609 **Advanced Vibrations**
3 Credits Offered Every Third Semester
Analysis of discrete and continuous vibrations via energy methods, free and forced response of linear systems, stability criteria, and introduction to random and nonlinear vibration. Applications to engineering problems. ***Prerequisites: MATH F302 or equivalent; ME F408; graduate standing in engineering.*** (3+0)

ME F617 **Power Analysis**
3 Credits Offered As Demand Warrants
Fundamentals of power generation including piping, pumps, fuels and combustion, steam generators, condensers, deaerators, evaporators, feedwater treatment and heating, regeneration, fuel handling, heat balance, equipment, economics, and plant layout. ***Prerequisites: ME F313.*** (3+0)

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ME F631 **Advanced Mechanics of Materials**
3 Credits Offered Every Third Semester
Theories of elasticity and plasticity for small and large deformations. Applications to engineering problems. ***Prerequisites: ES F331 or equivalent; graduate standing in engineering.*** (3+0)

ME F634 **Advanced Materials Engineering**
3 Credits Offered Every Third Semester
Atomic bonding, crystal structure, crystal imperfections, phases and interfaces, microstructures, phase diagrams, phase transformation, transport and diffusion, metal deformation, fracture of materials, deterioration of materials, electronic and physical properties of materials. ***Prerequisites: ME F334; MATH F302 or equivalent; graduate standing in engineering.*** (3+0)

ME F640 **Introduction to Microfluidics**
3 Credits Offered Spring Odd-numbered Years
Overview of basic concepts and principles of fluids at the micron scale; introduction to the design and fabrication of microfluidic devices. ***Prerequisites: ES F341; PHYS F103X (for Math and non-Physics science major); PHYS F211X (for Engineering, Math and Physics major); graduate standing or permission of instructor. Stacked with ME F440.*** (3+0)

ME F641 **Advanced Fluid Mechanics**
3 Credits Offered Every Third Semester
Introduction to viscous flows, laminar boundary layers, turbulent boundary layers, turbulent jets and wakes, applications to heat transfer and drag. ***Prerequisites: ES F341 or equivalent; graduate standing in engineering.*** (3+0)

ME F642 **Advanced Heat Transfer**
3 Credits Offered Every Third Semester
Heat conduction in two and three dimensions under steady and transient conditions. Free and forced convection in internal and external flows. Radiation from black and gray surfaces and gas-filled enclosures. Both analytical and numerical methods are covered. ***Prerequisites: ME F441 or equivalent; graduate standing in engineering.*** (3+0)

ME F656 **Space Systems Engineering**
3 Credits
A multidisciplinary team of students will perform a preliminary design study of a major space system. Design considerations will include requirements for project management, spacecraft design, power, attitude control, thermal control, communications, computer control and data handling. The students will present their final design in a written report and a public seminar. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with EE F656. (3+0)

ME F658 **Energy and the Environment**
3 Credits Offered Fall Odd-numbered Years
Basic concepts of energy supply, demand, production of heat and power impacts of energy use on the environment. Extensive discussion of mitigation technologies and strategies for meeting energy needs while preserving environmental quality. ***Recommended: CHEM F106X; ES F346 or equivalent; MATH F201X; PHYS F211X; graduate standing.*** Cross-listed with ENVE F658. Stacked with ME F458; ENVE F458. (3+0)

ME F685 **Arctic Heat and Mass Transfer**
3 Credits Offered As Demand Warrants
An introduction to the principles of heat and mass transfer with special emphasis on application to problems encountered in the Arctic such as ice and frost formation, permafrost, condensation and heat loss in structures. ***Prerequisites: graduate standing or permission of instructor.*** (3+0)

ME F687 **Arctic Materials Engineering**
3 Credits Offered As Demand Warrants
A study of engineering material performance at low temperatures. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

MECHANICS-DIESEL/HEAVY EQUIPMENT

MECN F103 **Starting and Charging Systems**
3 Credits
Starting and charging systems, diagnostic methods and specifications that are standard in the industry. Volt, amperage and load tests on a battery. (1+4)

MECN F104 **Mobile Equipment Maintenance**
1 Credit
Technical, financial and legal aspects of mobile equipment maintenance. Students will work in groups to perform a maintenance operation and create maintenance records on a variety of vehicle types. (0.5+1)

MECN F112 **Basic Auto Maintenance**
1 Credit
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. (1+0)

MECN F159 **Manual Transmissions and Clutches**
2 Credits
Two major areas of automotive maintenance and repair: inspection and replacement of common clutch types; and maintenance, inspection and overhaul of automotive manual transmissions. (1+2)

MECN F201 **Advanced Automobile Equipment Electronics**
2 Credits
Troubleshooting and repairing a wide range of electronic systems found in both light and heavy equipment including, but not limited to, load moment limiting, motor speed control, electronic control of hydraulic systems and electronic governors for power generation. (1+2)

MECN F202 **Principles of Electric Drive Vehicles**
2 Credits
In-depth study of batteries: design, construction, testing and charging, currents and maintenance. Knowledge applied to DC motors, electronic controls and electronic traction motor controls. The in-shop training discusses environmental impacts of electric drive vehicles. (2+0)

MECN F203 **Basic Power Generations**
3 Credits
Portable and stationary electric power generators and the relationship of magnetism, AC/DC currents, motors, generators, transformers and electrical distribution. Special fees apply. ***Recommended: AUTO F110.*** (2+2)

MECN F204 **Basic Alternating Current Electrician Skills**
2 Credits
Basic residential and commercial electrician skills; current theory and applications; electrical measurement and circuitry. (1+2)

MECN F205 **Uninterruptible Power Supplies**
1 Credit
Residential and commercial power supplies; troubleshooting batteries; electronic components; reading UPS schematics. (0.5+1)

MECN F206 **Emergency Backup Power Generation**
1 Credit
Language and fundamentals of electricity; circuitry; conductor types and sizes; writing methods; system requirements of power generation. (0.5+1)

MECN F207 **Power Generation Governors**
2 Credits
Mechanically and electrically controlled engines with emphasis on what is a governor and what is its function in power generation will be covered in the hands-on diagnostic training. (1+2)

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MECN F208 Alternative Fuels
2 Credits
History of fuels with emphasis on the known alternative fuels: natural gas, methanol, ethanol and propane. A research project is required. (1+2)

MECN F210 Hydraulics
3 Credits Offered Spring
Theory of fluid power and the components that make up a hydraulic system found on heavy equipment. Identification and description of hydraulic cylinders, motors, directional valves commonly found on heavy equipment. Includes testing of equipment and performing hydraulic pressure and flow tests. ***Prerequisites: DSLT F101; DSLT F103; DSLT F105.*** (1+4)

MILITARY SCIENCE

A per-semester fee for clothing, equipment and other safety items required to participate in mandatory Military Science labs. Lab fees apply only to the primary Military Science classes (MILS F101, F102, F201, F202, F301, F302, F401 and F402.)

MILS F101 Foundations of Officership
2 Credits
Issues and competencies central to a commissioned officer's responsibilities. Presents a framework for understanding officership leadership and Army values. Addresses life skills including fitness and time management. Designed to encourage insight into the Army as a profession and the officer's role within the Army. Special fees apply. (1+2)

MILS F102 Basic Leadership
2 Credits
Continuation of MILS F101. Focus on communications, leadership and problem solving. Life skills lessons include: problem solving, goal setting, interpersonal communication, and assertiveness. Lessons yield immediately useful skills. Provides accurate information about life in the Army, including the organization of the Army, employment benefits and work experiences of junior officers. Special fees apply. (1+2)

MILS F201 Individual Leadership Studies (s)
3 Credits
Communication and leadership theory and application. Focus on critical life skills. Emphasis on relevance of life skills to future success in the Army. Includes a major leadership and problem solving case study which draws on virtually all of the instruction in MILS F101 and MILS F102. Special fees apply. (2+2)

MILS F202 Leadership and Teamwork
3 Credits
Focus on officership providing an extensive examination of the unique purpose, roles and obligations of commissioned officers. Includes a detailed look at the origin of our institutional values and their practical application in decision-making and leadership. Core focus is a capstone case study in officership that traces the Army's successes and failures as it evolved from the Vietnam War to present, placing previous lessons on leadership and officership in a real-world context that directly affects the future of cadets. Draws the various components of values, communications, decision-making, and leadership together to focus on a career as a commissioned officer. Special fees apply. (2+2)

MILS F250 Leaders Training Course
3 Credits
A four-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. ***Prerequisites: At least two years of schooling remaining upon completion of camp. Prerequisite: Admission by arrangement with professor of military science.*** (3+0)

MILS F301 W Leadership and Problem Solving
4 Credits
Challenges cadets to study, practice and evaluate adaptive leadership skills as they are presented with the demands of preparing for the ROTC Leadership Development Assessment Course (LDAC). Challenging scenarios related to small unit tactical operations are used to develop self awareness and critical thinking skills. Cadets receive systematic and specific feedback on their leadership abilities. Cadets at the MSL III level begin to analyze and evaluate their own leadership values, attributes, skills and actions. Primary attention is given to preparation for LDAC and the development of leadership abilities. Special fees apply. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; junior standing in MILS; permission of instructor.*** (3+2)

MILS F302 O Leadership and Ethics
4 Credits Offered Spring
Interdisciplinary study of effective leadership techniques and preparation for attendance in MILS F350. Laboratory sessions offer practical application of concepts taught in classroom sessions. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; junior standing in MILS; permission of instructor.*** (3+2)

MILS F350 Leadership Development Assessment Course
3 Credits
Five-week course structured to assess and develop the leadership capabilities of the cadet by using a variety of situations in a military environment. ***Prerequisites: MILS F301; MILS F302; must be enrolled as an advanced course cadet; and have the recommendation of the Department Head.*** (3+0)

MILS F351 Cadet Troop Leadership Training
2 Credits
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: MILS F101; MILS F350; must be enrolled as an advanced course cadet.*** (0+0)

MILS F401 Developmental Leadership (s)
4 Credits
Develops student proficiency in planning, executing and assessing complex operations, functioning as a member of a staff and providing leadership-performance feedback to subordinates. Students are given situational opportunities to assess risk, make ethical decisions and provide coaching to fellow ROTC students. MSL IV cadets are measured by their ability both to give and receive systematic and specific feedback on leadership abilities. Cadets at the MSL IV level analyze and evaluate the leadership values, attributes, skills and actions of MSL III cadets while simultaneously considering their own leadership skills. Attention is given to preparation for BOLC II and the development of leadership abilities. Special fees apply. ***Prerequisites: Senior standing in MILS and permission of instructor.*** (3+2)

MILS F402 Officership
4 Credits
Continuation of MILS F401. Includes study of military ethics and law. Student role in laboratory sessions is to plan instruction and assess performance of MILS F100-F300-level students. Special fees apply. ***Prerequisites: Senior standing in MILS and permission of instructor.*** (4+0)

MILS F442 History of the American Military (s)
3 Credits
The military's place in American life and society from the Colonial era to the present. Role of the military institution in shaping the nature of American society while reflecting the character of the society it serves. Also available via Independent Learning. ***Prerequisites: Sophomore standing or permission of instructor.*** Cross-listed with HIST F442. (3+0)

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MINERAL PREPARATION ENGINEERING

A per semester student computing facility user fee is assessed for CEM engineering courses. This fee is in addition to any lab/material fees.

MPR F601 **Froth Flotation**
3 Credits Offered Fall
Theory and application of bulk and differential froth flotation to metallic minerals, nonmetallic minerals and coal. ***Prerequisites: Admission by arrangement.*** (2+3)

MPR F606 **Plant Design**
3 Credits Offered Fall Odd-numbered Years
Selection and design of equipment for the operation of mineral and coal beneficiation plants for specific custom and milling problems. ***Prerequisites: Admission by arrangement.*** (1+6)

MPR F611 **Hydrometallurgy**
3 Credits
Study of the theoretical and engineering aspects of the processes to recover metals from different types of ores and/or scraps, in which aqueous solutions play the predominate role. ***Prerequisites: MATH F202X; CHEM F331; or permission of instructor.*** (3+0)

MPR F612 **Solution Concentration and Purification**
3 Credits
The physical chemistry of reaction encountered in solution concentration and purification processes. The types of reaction discussed are cementation, solvent extraction, ion exchange and carbon absorption which are studied in terms of solution chemistry, reaction kinetics and mass transfer effects. ***Prerequisites: MATH F202X; CHEM F331; or permission of instructor.*** (3+0)

MPR F613 **Waste Problems and Treatments**
3 Credits
Waste problems and treatments encountered in mineral processing and metallurgical industries. Includes waste problems and treatments in gold, copper, zinc, iron and steelmaking, aluminum and non-metal industries as well as in electronic and electroplating industries. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

MPR F684 **Mineral Preparation Research**
3 Credits
Basic research and its needs in the field of mineral beneficiation, including magnetic susceptibility, dielectric constants and electrical conductivity of minerals; chemical theory and mechanism of bubble contact in flotation; and the effect of ultrasonic vibration in unit processes. ***Prerequisite: Admission by arrangement.*** (1+6)

MPR F688 **Graduate Seminar I**
1 Credit
Preparation and presentation of research outlines by graduate students and participation in regularly organized mineral engineering department seminars. ***Prerequisites: Admission to graduate program.*** Cross-listed with MIN F688. (1+0)

MINING APPLICATIONS AND TECHNOLOGIES

AMIT F101 **Introduction to Mining**
3 Credits Offered As Demand Warrants
Fundamentals of surface and underground mining, economic planning, proper exploration designs, environmental concerns and safety factors. Special fees apply. (3+0)

AMIT F109 **Underground Mine Safety**
1 Credit Offered As Demand Warrants
Rights of miners, self rescue devices, introduction to the work environment, escapeways, roof and ground control, ventilation, health, cleanup, hazard recognition, first aid, mine gasses and electrical hazards. Course fulfills the Mine Safety Health Administration requirements for new underground miner training. Students are awarded MSHA certificate upon course completion. Special fees apply. (1+0)

AMIT F110 **Underground Mining I**
3 Credits Offered As Demand Warrants
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. Special fees apply. (3+0)

AMIT F120 **Explosives I**
3 Credits Offered As Demand Warrants
Theory and safe use of explosives with a focus on blasting agents used for rock excavation. Special fees apply. (3+0)

AMIT F125 **Mineral Exploration Techniques**
3 Credits Offered As Demand Warrants
Modern, scientific exploration and prospecting techniques utilized in Alaska since the 1970s. Exploration design, ore deposit models, exploration geochemistry and geophysics, drilling sampling and geostatistics. Also available via Independent Learning. Special fees apply. (3+0)

AMIT F129 **Surface Mine Safety**
1 Credit Offered As Demand Warrants
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. Special fees apply. (1+0)

AMIT F130 **Surface Mining Operations**
3 Credits Offered As Demand Warrants
Safe operations of a surface mine. Placer gold, sand and gravel, coal, and open pit metal mines. Special fees apply. (3+0)

AMIT F135 **Introduction to Mining Systems and Equipment**
4 Credits Offered as Demand Warrants
An overview to the field of mining beneficiation and comminution, systems and equipment used for the mining and mineral processing industry. Fundamentals of basic separation and mineral beneficiation of surface and underground mining, economic planning, environmental concerns, safety and terminology will be explored. Special fees apply. (3+3)

AMIT F140 **Environmental Permitting**
1 Credit Offered As Demand Warrants
Mineral development permits required in Alaska. Students are encouraged to provide their own case histories. Special fees apply. (1+0)

AMIT F145 **Introduction to Mineral Beneficiation**
3 Credits Offered As Demand Warrants
Provides an overview or introduction into the field of mineral beneficiation and comminution, systems and equipment used for the mineral processing industry. Fundamentals of basic separation and mineral beneficiation, environmental concerns, safety and terminology will be explored. Special fees apply. (3+0)

AMIT F152 **Fire Assay Techniques**
1 Credit Offered As Demand Warrants
Sampling, theory and practice of fire assaying. Fluxes, oxidation and reduction reactions, fusion of assay charges, cupellation, annealing, micro-weighing and assay charge calculation. Special fees apply. (1+0)

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AMIT F153 **Laboratory Analysis**
1 Credit Offered As Demand Warrants
Production laboratory procedures for sample analysis, heap leaching and titrations. Individual projects required. Special fees apply. (1+0)

AMIT F154 **Water Quality and Flocculants**
3 Credits Offered as Demand Warrants
Water quality processes using flocculants and removal of total suspended solids from placer mining waste water. Design of settling ponds and recycle system. Students will work with individual case histories. Special fees apply. (3+0)

AMIT F161 **Alaska Ore Deposits**
1 Credit Offered As Demand Warrants
Geology, ore reserves and preliminary mining plans of significant Alaska mineral deposits. Special fees apply. (1+0)

AMIT F162 **Geochemical Sampling**
1 Credit Offered As Demand Warrants
Hands-on scientific sampling methods for rock, soil, pan concentrates, stream sediments, air and water. Special fees apply. (1+0)

AMIT F170 **Fundamentals of Coal Mining**
3 Credits Offered As Demand Warrants
Origin and types of Alaska 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. Special fees apply. (3+0)

AMIT F205 **Geomagnetic Surveying**
1 Credit Offered As Demand Warrants
Placer gold deposit prospecting using magnetic surveying. Student survey work and data interpretation. Special fees apply. (1+0)

AMIT F210 **Underground Mining II**
3 Credits Offered As Demand Warrants
Skill training conducted in safety, drilling, blasting, ground support, mucking, maintenance and utilities. Special fees apply. (3+0)

AMIT F220 **Explosives II**
3 Credits Offered As Demand Warrants
Advanced techniques in safe use of explosives. Students get hands-on experience in blasting. Special fees apply. (3+0)

AMIT F230 **Field Methods**
2 Credits Offered As Demand Warrants
Topographic map reading using a compass and basic field procedures. Map and chart preparation. Drafting skills for prospecting maps, mine maps, permits and data presentation. Special fees apply. (2+0)

AMIT F231 **Heap Leaching**
1 Credit Offered As Demand Warrants
Heap leaching covering cyanide safety, leach pad construction and placement, cyanide processing, thiourea, case histories, applications to Alaska and economics. Special fees apply. (1+0)

AMIT F282 **Mining Coop Work Experience**
1-2 Credits Offered As Demand Warrants
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. Special fees apply. (0+0)

MINING ENGINEERING

A per semester student computing facility user fee is assessed for CEM engineering courses. This fee is in addition to any lab/material fees.

MIN F101 **Minerals, Man and the Environment**
3 Credits
A general survey of the impact of the mineral industries on man's economic, political and environmental systems. (3+0)

MIN F103 **Introduction to Mining Engineering**
1 Credit
Concepts and methods utilized in mining engineering and mining unit operations. (1+0)

MIN F104 **Mining Safety and Operations Laboratory**
1 Credit
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. Special fees apply. (0+3)

MIN F202 **Mine Surveying**
3 Credits Offered Fall
Surveying principles for surface and underground control of mining properties. Field and office procedures for preparation of maps and engineering data. Special fees apply. ***Prerequisites: MATH F107X, MATH F108 or equivalents.*** (2+3)

MIN F225 **Quantitative Methods in Mining Engineering**
2 Credits Offered Fall
Introduction to ore reserve estimation, classical estimation methods and techniques, error in estimations and pitfalls, introduction to classical statistics, introduction to geostatistics, ordinary kriging, block kriging, modeling the sample variogram, co-kriging and global estimation. ***Prerequisites: MIN F103; MATH 107X and MATH 108X; MATH F200X or equivalent; or permission of instructor.*** (2+0)

MIN F226 **Mine Development**
2 Credits Offered Spring
Review of pre-mining activities. Access to mining property, haul road location and design. Access to ore body; shaft, slope and ramp locations; shape, sizing and development. Development of access in frozen ground environments. Layout of development mains, cross-cuts, raises and winzes for ventilation, transport and optimum extraction of ore body. Level intervals, size and location of ore passes, design and optimization. ***Prerequisites: MIN F103; MIN F225; or permission of instructor. Recommended: MATH F200X.*** (2+0)

MIN F301 **Mine Plant Design**
3 Credits
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 F208 and ES F307. Recommended: ES F341.*** (3+0)

MIN F302 **Underground Mine Environmental Engineering**
3 Credits
Analysis of underground mine ventilation systems, ventilation planning, design and engineering control, mine ventilation network. ***Prerequisites: MIN F103;MIN F226; ES F341*** (2+3)

MIN F304 **Introduction to Metallurgy**
3 Credits
Overview of the extractive metallurgy of gold, silver and platinum group metals; from gravity concentration to cyanidation and smelting. ***Prerequisites: PHYS F212X.*** (3+0)

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MIN F313 Introduction to Mineral Preparation
3 Credits
Elementary theory and principles of unit processes of liberation, concentration and solid-fluid separation as applied to mineral beneficiations. ***Prerequisites: Junior standing or permission of instructor.*** (2+3)

MIN F370 Rock Mechanics
3 Credits
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 F331 or permission of instructor.*** (2+3)

MIN F380 Computer Aided Orebody Modeling
1 Credit Offered Fall
Develops a orebody model from drillhole data in a computer aided design environment. The data is converted into a drillhole database, following which, a 3D visual model is developed. Basic tools covered include concepts of computer aided design, database error checking and triangulation. ***Prerequisites: GEOS F332; or permission of instructor.*** (2+3)

MIN F401 Mine Site Field Trips
1 Credit
Field trips to active surface and underground mines to gain perceptual knowledge of modern mining systems by observation. Includes a systematic summarization and analysis of the mine after each visit to gain an in-depth understanding of mining engineering principles. Graded Pass/Fail. ***Prerequisites: MIN F202; MIN F301; MIN F302; MIN F370.*** (0.5+3)

MIN F407 W Mine Reclamation and Environmental Management
3 Credits
Principles and practices of mine reclamation and waste disposal. Pre-mining assessments and plans. Design of settling and tailings ponds and waste impoundments. Stream bed restoration and revegetation. ***Prerequisites: CHEM F106X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor. Recommended: ES F341.*** (3+0)

MIN F408 O Mineral Valuation and Economics
3 Credits
Introduction to engineering economics, ore sampling and reserve calculations, and mine feasibility studies. ***Prerequisites: COMM F131X or COMM F141X; GE F375 or MIN F301.*** (3+0)

MIN F409 Operations Research and Computer Applications in Mineral Industry
3 Credits
Fundamental concepts of probability and statistics and the use of operations research and computer techniques for understanding, analysis, forecasting and optimization of mining operations and systems. ***Prerequisites: MIN F225; MIN F454 or equivalent; or permission of instructor.*** (3+0)

MIN F415 Coal Preparation
3 Credits
Unit operations, flowsheets, washability characteristics and control by sink-float methods for coal preparation plants. Market requirements and economics of preparation. ***Prerequisites: MIN F313 or graduate standing.*** (2+3)

MIN F443 Principles and Applications of Industrial Explosives
3 Credits
Types and properties of industrial explosives; systems of initiation; theories of blasting; designs of open pit bench blasting; designs of underground blasting/rounds; applications in mining, civil construction and other fields; blasting vibration, structural damage and their control; overbreak control; safe practices; safety regulations; blast hole drilling and drilling equipment. ***Prerequisites: MIN F370 or permission of instructor.*** (3+0)

MIN F447 Placer Mining
3 Credits
Placer formation and identification, reserve estimation, mine and wash plant design. Includes surface and underground mining methods, equipment specification, environmental compliance and reclamation. ***Prerequisites: MIN F301; MIN F313.*** (3+0)

MIN F454 Underground Mining Methods
3 Credits
Underground mining methods for coal and non-coal deposits. Includes design parameters, selection of mining methods, mine planning process, auxiliary operations and various underground mining methods. ***Prerequisites: MIN F301; MIN F302; MIN F370.*** (3+0)

MIN F481 Computer-Aided Mine Design — TECHBASE
3 Credits Offered Spring Odd-numbered Years
Familiarization with TECHBASE to store, manage, model and display exploration data. Includes creating a database; loading, editing and reporting data; calculating summary statistics; and constructing base and contour maps. Use of TECHBASE tools for two- and three- dimensional estimation methods, mine design and scheduling, production grade-tonnage curve using a range of cutoff grades and generation of outlines for pit design. ***Prerequisites: Junior, senior or graduate standing in Mining Engineering, Geological Engineering, or permission of instructor.*** (2+3)

MIN F482 Computer-Aided Mine Design — VULCAN
3 Credits Offered Fall
Familiarization with VULCAN mine design software to store, manage, model and display exploration data. Estimate volume, tonnage and quality of reserve, design declines and development drives in underground and surface coal and hardrock mines, design underground and surface coal mine plans and design of underground stopes, perform underground and surface grade control. ***Prerequisites: Junior, senior or graduate standing in Mining Engineering, Geological Engineering, or permission of instructor.*** Stacked with MIN F682. (2+3)

MIN F484 Surface Mining Methods
2 Credits
Modern methods of surface mine design. Strip and open pit optimization techniques. Production planning and scheduling. Use of mine design software. ***Prerequisites: Senior standing, concurrent enrollment in MIN F409 or permission of instructor.*** (2+0)

MIN F485 Mining Engineering Exit Exam
0 Credits
Exam is designed to evaluate overall performance as mining engineering graduates. Covers various topics that students have learned in the field of mining engineering and related fields. Graded Pass/Fail. ***Prerequisites: Senior standing in mining engineering.*** (0+0)

MIN F489 Mining Design Project I
1 Credit Offered Fall
This course is a pre-cursor to MIN F490. The student is expected to meet with the instructor to finalize the senior design project topic, lay out a project plan, gather data and prepare as necessary for the successful execution of the project in MIN F490. Note: Both MIN F489 and MIN F490 must be completed to fulfill the writing intensive requirement. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; MIN F301; MIN F302; MIN F370.*** (1+0)

MIN F490 W Mining Design Project II
2 Credits Offered Spring
Design of mine layout including extraction and beneficiation, and economic evaluation of a mining project. A comprehensive written report of the design and analysis is required. Note: Both MIN F489 and MIN F490 must be completed to fulfill the writing intensive requirement. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; MIN F301; MIN F302; MIN F370; MIN F454; MIN F489.*** (1+4)

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MIN F601 Application of Artificial Neural Networks
3 Credits
Basic neural network architectures, including rules, training methods and practical applications. Training and application issues typical of earth sciences problems. Some topics require mathematical analysis. Genetic algorithms and use of network ensembles will be briefly presented. ***Prerequisites: Graduate standing in engineering; programming ability; knowledge of MATLAB, a plus. Recommended: MATH F202X, MATH F314; MIN F408; MIN F635.*** (3+0)

MIN F621 Advanced Mineral Economics
3 Credits
Introduction to options valuation of mineral projects; uncertainty and risk in mineral valuations; stochastic price models; dynamic programming and investment analysis; real options techniques. ***Prerequisites: Admission by arrangement.*** (3+0)

MIN F631 Research Methods in Mineral Engineering
4 Credits
Research methods including problem definition and statement, designing experiments, collecting and interpreting data. Methods of theoretical and experimental analysis will be reviewed and examples given. ***Prerequisites: Graduate standing or permission of instructor.*** (3+3)

MIN F635 Geostatistical Ore Reserve Estimation
3 Credits Offered Spring
Introduction to the theory and application of geostatistics. Review of classical statistics, continuous and discrete distributions, hypothesis testing and global estimation. Presentation of fundamental geostatistical concepts including: variogram, estimation variance, block variance, kriging, geostatistical simulation. Emphasis on the practical application of geostatistical techniques. ***Prerequisites: MIN F408 or equivalent; graduate standing; or permission of instructor.*** Cross-listed with GE F635. (2+3)

MIN F637 Mine Systems Simulation
3 Credits
Application of computer simulation to the analysis of static and dynamic mine systems and the development of useful programs for mine operators. Design of simulation experiments in mining engineering. ***Prerequisites: MIN F409 or equivalent; graduate standing.*** (2+3)

MIN F646 Mining Engineering in the Arctic
3 Credits
Mining engineering problems encountered in arctic conditions. Design and construction of mine openings in frozen ground, mechanical and thermal properties of rocks at subfreezing temperatures, fragmentation and excavation of frozen ground, surface mining problems in the arctic climate, equipment maintenance, mined-land reclamation and economic evaluation of mineral properties in arctic regions. Case studies also are presented. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

MIN F652 Numerical Methods in Mine Ventilation
3 Credits
Differencing schemes for the partial differential equations of flow in mine networks, typical boundary conditions for mine ventilation systems, computer-aided solution techniques. Application to flow of fluids through porous media is covered. ***Prerequisites: MIN F302 or equivalent; graduate standing.*** (2+3)

MIN F670 Optimization Models in the Mineral Industry
3 Credits
Study of concepts and methods in analysis of systems involving single and multiple objectives, with applications to mining engineering and mine environmental systems. ***Prerequisites: MIN F409 or equivalent, permission of instructor.*** (3+0)

MIN F673 Advanced Rock Mechanics
3 Credits
The study of theoretical and experimental methods in rock mechanics. State of stress and potential failure zone around two- and three-dimensional structures in rock based on theoretical, numerical and experimental techniques and failure criteria are presented. ***Prerequisites: MIN F370 or equivalent or graduate standing.*** (2+3)

MIN F682 Computer-Aided Mine Design — VULCAN
3 Credits Offered Fall
Familiarization with VULCAN mine design software to store, manage, model and display exploration data. Estimate volume, tonnage and quality of reserve, design declines and development drives in underground coal and hardrock mines, design underground coal mine plans and design of underground stopes, perform underground grade control. ***Prerequisites: Graduate standing in Mining Engineering or Geological Engineering; or permission of instructor.*** Stacked with MIN F482. (2+3)

MIN F688 Graduate Seminar I
1 Credit
Preparation and presentation of research outlines by graduate students and participation in regularly organized mineral engineering department seminars. ***Prerequisites: Admission to graduate program.*** Cross-listed with MPR F688. (1+0)

MIN F689 Graduate Seminar II
1 Credit
Presentation of graduate research by graduate students and participation in regularly organized mineral engineering department seminars. ***Prerequisites: Admission to graduate program.*** (1+0)

MUSIC

MUS F101 University Chorus (h)
1 Credit
A chorus serving both beginning and skilled singers presenting concerts each semester of popular and classic choral literature. (0+3)

MUS F103 Music Fundamentals (h)
3 Credits
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. (3+0)

MUS F105 UAF Steel Drum Ensemble (h)
1 Credit
Performance class designed to prepare performances of soca, calypso, and reggae music from the Caribbean Islands, as well as Latin style music. Ensemble includes percussion and a few other supporting instruments. May be repeated for credit. ***Prerequisites: Ability to sight-read music; permission of instructor. Recommended: MUS F103.*** (0+3)

MUS F117 Northern Lights String Orchestra (h)
1 Credit
Explore literature written primarily for string orchestra. Periodically, winds and percussion will join for performances of literature requiring additional instruments. Works studied vary from semester to semester depending on the instrumentation of those enrolled in the course. May be repeated for credit. ***Prerequisites: Previous instruction on a bowed string instrument; permission of instructor.*** (0+3)

MUS F122 History of Popular Music (h)
3 Credits
The development of American popular music from ragtime to rock to rap: its styles, artists, cultural origins, social symbolism and influence worldwide. How popular music in each decade reflects the social ethos of the times, expresses youth attitudes and mirrors lifestyle. An examination of music's function in society. (3+0)

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MUS F124 **Music in World Cultures** (h)
3 Credits
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. (3+0)

MUS F125 **Enjoying Jazz** (h)
2 Credits
An overview of the jazz idiom. Learning about the performers, styles and the music by using records, CD's, cassettes and video tapes. A listening intensive course that should provide students with a better understanding of this art form and the significant styles and artists in it. Also available via Independent Learning. (2+0)

MUS F131 **Basic Music Theory** (h)
2 Credits
Intensive training in fundamentals of music, pitch and rhythm notation, scales, modes, triads and techniques of harmonization. ***Prerequisites: Concurrent enrollment in MUS F133.*** (2+0)

MUS F132 **Basic Music Theory** (h)
2 Credits
Concentration upon acquisition of skills in harmonization and techniques of formal and harmonic analysis. ***Prerequisites: MUS F131 or equivalent and concurrent enrollment in MUS F134 unless exempted by music theory placement test.*** (2+0)

MUS F133 **Basic Ear Training** (h)
2 Credits
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. ***Prerequisites: Concurrent enrollment in MUS F131.*** (2+0)

MUS F134 **Basic Ear Training** (h)
2 Credits
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. ***Prerequisites: MUS F133 or equivalent and concurrent enrollment in MUS F132 unless exempted by music theory placement test.*** (2+0)

MUS F151 **Class Lesson** (h)
1 Credit
Class instruction in piano, voice, orchestral instrument or guitar. May be repeated for credit. Course may not be audited. Special fees apply. (0+3)

MUS F153 **Functional Piano** (h)
1 Credit
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. Course may not be audited. Special fees apply. ***Prerequisites: For music majors, MUS F131 or equivalent or concurrent enrollment in MUS F131. For non-music majors, permission of instructor.*** (1+0)

MUS F161 **Private Lessons** (h)
2 Credits
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special fees apply. ***Prerequisites: Admission by audition. Special permission required. Note: Course may not be audited. Credit-No Credit grading not permitted. Concurrent enrollment in MUS F190: Recital Attendance required.*** (2+0)

MUS F162 **Private Lessons** (h)
2 Credits
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special fees apply. ***Prerequisites: Admission by audition. Special permission required. Note: Course may not be audited. Credit-No Credit grading not permitted. Concurrent enrollment in MUS F190: Recital Attendance required.*** (2+0)

MUS F190 **Recital Attendance**
0 Credits
Recital and concert attendance. Graded Pass/Fail. (1+0)

MUS F200X **Aesthetic Appreciation: Interrelation of Art, Drama, and Music** (h)
3 Credits
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. Also available via Independent Learning. ***Prerequisites: Placement in ENGL F111X or higher; sophomore standing; or permission of instructor.*** Cross-listed with ART F200X; THR F200X. (3+0)

MUS F203 **Fairbanks Symphony Orchestra** (h)
1 Credit
Prerequisites: Admission by audition. (0+3)

MUS F205 **Wind Ensemble** (h)
1 Credit
Prerequisites: Admission by audition. (0+3)

MUS F207 **UAF Jazz Band** (h)
1 Credit
A performance ensemble that performs a feature concert each semester and tours frequently within the state and occasionally outside the state. ***Prerequisites: Audition and permission of instructor. Course may not be audited.*** (0+3)

MUS F211 **Choir of the North** (h)
1 Credit
A mixed choir serving more advanced singers presenting concerts of more advanced choral music literature. ***Prerequisites: Admission by audition.*** (0+3)

MUS F221 **History of Music** (h)
3 Credits
Music before 1750. ***Prerequisites: MUS F131; MUS F132; or permission of instructor.*** (3+0)

MUS F222 **History of Music** (h)
3 Credits
Music since 1750. ***Prerequisites: MUS F131; MUS F132; or permission of instructor.*** (3+0)

MUS F223 **Alaska Native Music** (h)
3 Credits
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. Cross-listed with ANS F223. (3+0)

MUS F231 **Advanced Music Theory** (h)
2 Credits Offered Fall
Continued study of harmony and musical form through analysis of representative works from the standard repertoire. ***Prerequisites: Concurrent enrollment in MUS F233.*** (1+2)

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MUS F232 **Advanced Music Theory** (h)
2 Credits Offered Spring
Study and synthesis of 20th century stylistic and harmonic idioms. ***Prerequisites: MUS F231 or equivalent; concurrent enrollment in MUS F234 unless exempted by music theory placement test.*** (1+2)

MUS F233 **Advanced Ear Training**
1 Credit
Continued training in sight singing and melodic dictation skills begun in MUS F133 and MUS F134. Harmonic dictation and error detection skills also included. ***Prerequisites: MUS F134 or equivalent; concurrent enrollment in MUS F231.*** (0+2)

MUS F234 **Advanced Ear Training**
1 Credit
Continued training in sight singing and melodic dictation skills begun in MUS F133 and MUS F134. Harmonic dictation and error detection skills also included. ***Prerequisites: MUS F233 and concurrent enrollment in MUS F232 unless exempted by music theory placement test.*** (0+2)

MUS F245 **Singer's Diction I: English and Italian** (h)
2 Credits
A systematic approach for singers through use of the International Phonetic Alphabet for the transcription and pronunciation of song texts in English and Italian. A singer's diction course would be valuable to radio announcers or anyone needing rules of pronunciation for names, titles, phrases, etc. in foreign languages. ***Recommended: One year of private voice lessons.*** (2+0)

MUS F246 **Singer's Diction II: French and German** (h)
2 Credits
A systematic approach for singers through use of the International Phonetic Alphabet for the transcription and pronunciation of song texts in French and German. A singer's diction course would be valuable to radio announcers or anyone needing rules of pronunciation for names, titles, phrases, etc. in foreign languages. ***Recommended: One year of private voice lessons.*** (2+0)

MUS F253 **Piano Proficiency**
0 Credits
Final phase of piano proficiency examination. Graded Pass/Fail. ***Prerequisites: MUS F153; music major; permission of instructor.*** (0+1)

MUS F261 **Private Lessons** (h)
2 Credits
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special fees apply. ***Prerequisites: Admission by audition. Special permission required. Note: Course may not be audited. Credit-No Credit grading not permitted. Concurrent enrollment in MUS F190: Recital Attendance required.*** (2+0)

MUS F262 **Private Lessons** (h)
2 Credits
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special fees apply. ***Prerequisites: Admission by audition. Special permission required. Note: Course may not be audited. Credit-No Credit grading not permitted. Concurrent enrollment in MUS F190: Recital Attendance required.*** (2+0)

MUS F307 **Chamber Music** (h)
1 Credit
String, brass or woodwind chamber music; piano chamber music and accompanying; stage band; and Alaska Camerata. Note: Course may not be audited. ***Prerequisites: Permission of instructor.*** (0+3)

MUS F313 **Opera Workshop** (h)
1-3 Credits
(0+3-9)

MUS F317 **Arctic Chamber Orchestra** (h)
1 Credit
The touring group of the Fairbanks Symphony Orchestra. Must be a member of the Fairbanks Symphony Orchestra. (MUS F203-EV1). ***Prerequisites: By audition only.*** (0+3)

MUS F319 **Alaska Chamber Chorale** (h)
1 Credit
An auditioned vocal ensemble of no more than 32 singers, male and female. The music learned and performed will be primarily, but not limited to, a cappella pieces with an emphasis on pre-classical and 20th century music. The group will perform alone and with other UAF music groups. ***Prerequisites: Audition and permission of instructor.*** (0+3)

MUS F331 **Form and Analysis** (h)
3 Credits
Formal and stylistic musical elements in historical context with special application to problems of proper stylistic performance. ***Prerequisites: MUS F232 or permission of instructor.*** (3+0)

MUS F332 **Introduction to Computer-based Music Technology** (h)
3 Credits
An introduction to personal computer-based software and music synthesis hardware to enable the student to print music scores and/or develop MIDI format sequencer files. May be repeated for credit. ***Prerequisites: MUS F232 or equivalent or permission of instructor. Recommended: MUS F432.*** (3+0)

MUS F351 O **Conducting** (h)
3 Credits
Principles of conducting; interpretation of vocal and instrumental ensemble music. ***Prerequisites: COMM F131X or COMM F141X; MUS F232.*** (3+0)

MUS F361 **Private Lessons** (h)
2 or 4 Credits
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special fees apply. ***Prerequisites: Admission by audition. Special permission required. Note: Course may not be audited. Credit-No Credit grading not permitted. Concurrent enrollment in MUS F190: Recital Attendance required.*** (2 or 4+0)

MUS F362 **Private Lessons** (h)
2 or 4 Credits
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special fees apply. ***Prerequisites: Admission by audition. Special permission required. Note: Course may not be audited. Credit-No Credit grading not permitted. Concurrent enrollment in MUS F190: Recital Attendance required.*** (2 or 4+0)

MUS F390 **Junior Recital**
0 Credits
Half-length solo music performance recital. Graded Pass/Fail. ***Prerequisites: MUS F262 or equivalent; music major; junior standing in music study; permission of instructor.*** (0+0)

MUS F410 W **Women in Music History** (h)
3 Credits
Lives and works of female musicians, composers and performers will be traced from the earliest days of the ancient and mythological periods through the

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medieval, Baroque, Classical and Romantic periods with special emphasis on composers of the 20th century. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; junior standing; or permission of instructor.*** Cross-listed with WGS F410. (3+0)

MUS F421 W **Music Before 1620** (h)
3 Credits
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 17th century. Includes study of prominent composers, early musical forms, original sources in translation, development of musical notation and development of early musical instruments. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; MUS F221; MUS F222; or permission of instructor.*** (3+0)

MUS F422 W **Music in the 17th and 18th Centuries** (h)
3 Credits
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: ENGL F111X; ENGL F211X or ENGL F213X; MUS F221; MUS F222; or permission of instructor.*** (3+0)

MUS F423 W **Music of the 19th Century** (h)
3 Credits
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, Tchaikovsky and others. Related readings in other aspects of the Romantic movement. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; MUS F221 or MUS F222; or permission of instructor.*** (3+0)

MUS F424 W **Music since 1900** (h)
3 Credits
Study of significant works from the modern repertoire, beginning with the later works of Strauss and continuing to the music of Stravinsky, the Expressionists, the Neoclassicists, Bartok, the Minimalists, and more recent developments. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; MUS F221 or MUS F222; or permission of instructor.*** (3+0)

MUS F426 **Music Literature** (h)
2 Credits
Music literature of brass, strings, keyboard, voice or winds, on a rotating basis as announced for the semester of offering. Course may be repeated four times for a total of 10 credits. ***Prerequisites: MUS F261 or equivalent; or permission of instructor. Recommended: MUS F221; MUS F222, and one course from the MUS F421-F424 Period Music History course sequence.*** (2+0)

MUS F431 **Counterpoint** (h)
3 Credits
Contrapuntal techniques by means of analysis and synthesis of pieces in contrapuntal idioms. (3+0)

MUS F432 **Orchestration and Arranging** (h)
3 Credits
Instrumentation and arranging for vocal and instrumental ensembles. (3+0)

MUS F433 **Seminar in Musical Composition** (h)
2-3 Credits
Development of compositional skills based upon the works of predominately 20th-century composers. May be repeated for credit. ***Prerequisites: MUS F232 or equivalent; permission of instructor.*** (2-3+0)

MUS F434 **Advanced Harmonic Analysis** (h)
3 Credits
Strengthens understanding of functional harmony through a series of case studies with each gradually increasing in analytical difficulty. Chromatic music of late-19th century European art music, represented by composers such as Chopin, Franck and Scriagin. ***Prerequisites: MUS F232 or equivalent, or permission of instructor.*** (3+0)

MUS F435 **Private Lessons in Music Composition** (h)
2-4 Credits Offered As Demand Warrants
Private instruction in advanced music composition consisting of one private lesson per week. Repeatable for credit. ***Prerequisites: MUS F433 or equivalent; audition; permission of instructor. Course may not be audited.*** (1-2+3)

MUS F461 **Private Lessons** (h)
2 or 4 Credits
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. See accompanying box for private lesson fees. Special fees apply. ***Prerequisites: Admission by audition. Special permission required. Note: Course may not be audited. Credit-No Credit grading not permitted. Concurrent enrollment in MUS F190: Recital Attendance required.*** (2 or 4+0)

MUS F462 **Private Lessons** (h)
2 or 4 Credits
Private instruction in piano, organ, voice, guitar, orchestral and band instruments. Private instruction shall consist of one private lesson per week. Music performance majors must enroll for 4 credits for MUS F361-F462 levels of study. All other students will normally enroll for 2 credits, except where special permission is granted. Special fees apply. ***Prerequisites: Admission by audition. Special permission required. Note: Course may not be audited. Credit-No Credit grading not permitted. Concurrent enrollment in MUS F190: Recital Attendance required.*** (2 or 4+0)

MUS F490 **Senior Recital**
0 Credits
Full length music solo recital. Graded Pass/Fail. ***Prerequisites: MUS F362 or equivalent; MUS F390 or equivalent; music major; senior standing in music study; permission of instructor.*** (0+0)

MUS F601 **Introduction to Graduate Study**
3 Credits
Materials, techniques and procedures for research in music. Examination of bibliographic sources. Required of all graduate students in music. Students should register for this class during their first fall semester in residence. ***Prerequisites: Provisional admission to graduate study and permission of instructor.*** (3+0)

MUS F606 **Advanced Chamber Music**
1-2 Credits
Advanced string, woodwind, brass, vocal chamber music, piano chamber music and accompanying. ***Prerequisites: MUS F307; graduate standing; and permission of instructor. Course may not be audited.*** (0+3 or 6)

MUS F607 **Seminar in Elementary and Secondary General Classroom Music**
3 Credits
Discussion of the theoretical basis for developing objectives for general and classroom music in the elementary and secondary schools. Evaluation of current curricula, methods and materials with respect to stated objectives. Evaluative methods in music. ***Prerequisite: Permission of instructor.*** (3+0)

MUS F608 **Seminar in Secondary Music Education**
2 Credits
Examination of current trends and problems in all aspects of secondary music education. Emphasis on curriculum development, philosophy and goals, instrumental and choral program administration, and aspects of music learning and evaluation. ***Prerequisites: Permission of instructor.*** (2+0)

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MUS F625 Topics in Music History
3 Credits
Detailed study of selected topics in music history and/or literature. Specific topic to be announced in advance of course offering. (3+0)

MUS F626 Advanced Music Literature
2 Credits
Advanced music literature of brass, strings, keyboard, voice or winds, on a rotating basis as announced each semester. Course may be repeated up to four times for a total of 10 credits. ***Prerequisites: MUS F461 or equivalent, or permission of instructor. Recommended: MUS F221; MUS F222; and/or courses from the MUS F421-F424 sequence.*** (2+0)

MUS F631 Seminar in Music Theory: History and Pedagogy
3 Credits
Historical development of music theory and music theory pedagogy (current teaching practices and survey of available teaching materials). ***Prerequisites: Permission of instructor.*** (3+0)

MUS F635 Graduate Private Lessons in Composition
2-4 Credits
Private instruction in advanced music composition consisting of one private lesson per week. Repeatable for credit. ***Prerequisites: Graduate standing; MUS F433 or equivalent: audition; permission of instructor. Course may not be audited. Recommended: Familiarity with computer-assisted music score preparation software.*** (1-2+3)

MUS F651 Advanced Conducting and Rehearsal Techniques
2-3 Credits
Study of conducting style and techniques and their application to representative compositions for different instrumental and vocal mediums. Repeatable for credit. ***Prerequisites: MUS F351 or equivalent; graduate standing; or permission of instructor.*** (2-3+0)

MUS F661 Advanced Private Lessons
2 or 4 Credits
Private instruction in piano, voice, or orchestral instruments consisting of one private lesson per week. Repeatable for credit. Course may not be audited. Special fees apply. ***Prerequisites: Special permission required. Graduate standing; MUS F462 or equivalent; audition. Note: Course may not be audited.*** (2 or 4+0)

MUS F690 Graduate Recital
0 Credits
Full length solo performance recital. Graded Pass/Fail. ***Prerequisites: MUS F490 or equivalent; graduate standing in applied music study; permission of instructor.*** (0+0)

MUSIC EDUCATION

MUED F110 Becoming a Music Teacher in the 21st Century
2 Credits
Introduction and exploration of the profession of music education. Focus on national educational policies and practices in education and music education. Opportunities for interaction with Alaska teachers, student teachers and students in the music education program. ***Prerequisites: ENGL F111X.*** (2+0)

MUED F201 Introduction to Music Education
2 Credits
Introduction to professional education with special emphasis on music education as practiced at the elementary, middle school and high school levels. Review of cultural, social, and current legal requirements that influence education and music education in the U.S. and Alaska. ***Prerequisites: ENGL F111X; ENGL F211X; MUED F110.*** (2+0+1)

MUED F309 Elementary School Music Methods
3 Credits
Principles, procedures and materials for teaching music to children at the elementary level. Cross-listed with ED F309. (3+0)

MUED F310 Practicum in Elementary Music Methods
1 Credit
Students will observe and reflect upon weekly fieldwork in elementary public school classrooms, grades K-5. Additionally, students will assist with and lead live classroom activities. For preservice music educators. ***Co-requisites: MUED F309. Recommended: ED F201.*** (0.5+1.5)

MUED F315 Music Methods and Techniques
2 Credits
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. Special fees apply. ***Prerequisites: Permission of instructor.*** (1+2)

MUED F316 Practicum in Middle-Level Music Methods
1 Credit
Students will observe and reflect upon weekly fieldwork in grades 4-6 beginning instrumental music classes. Additionally, students will assist with and lead live classroom activities. For preservice music educators. ***Prerequisites: MUS F315; any music techniques/methods course plus concurrent enrollment in a second MUS F315 course. Recommended: ED F201.*** (0.5+1.5)

MUED F405 W Secondary School Music Methods
3 Credits
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. Note: Should be taken prior to ED F453. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; permission of instructor.*** (2+3)

MUED F406 Practicum in Secondary Music Methods
1 Credit
Students will observe and reflect upon weekly fieldwork in a local middle or high school. Additionally, students will assist with and lead live classroom activities. For preservice music educators. Taken concurrently with MUED F405, Secondary Schools Music Methods. (0.5+1.5)

MUED F610 Historical and Contemporary Issues in Music Education
3 Credits
Overview of historical and contemporary issues in music education, including the early years in America, music education since 1950, professional organizations, philosophy, curricular approaches, comprehensive musicianship, the standards movement, assessment, multicultural music education and impact of technology. ***Prerequisites: Graduate standing in a music degree program. Recommended: One year of K-12 teaching experience.*** (3+0)

NATURAL RESOURCES MANAGEMENT

NRM F101 Natural Resources Conservation and Policy
3 Credits Offered Fall
Conservation of natural resources including history, ecological and social foundations. Examines principles of sustained yield, carrying capacity, supply and demand, and world population growth as applied to agriculture, range, forest, wildlife, fisheries, recreation, minerals and energy management. A wide range of perspectives is presented to help students develop a personal philosophy toward natural resources. Prepare a multiple resource observation plan for an undeveloped area on campus. Optional all-day field trips take place the first two Saturdays of the semester. ***Prerequisites: Placement in ENGL F111X.*** (3+0)

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NRM F102 Practicum in Natural Resources Management
1-2 Credits
Practical experience in natural resources management. Supervised individual study on a farm, in a greenhouse, managed forest, agency or business, or another approved location. Graded Pass/Fail. ***Prerequisites: Natural Resource Management majors only and permission of instructor.*** (1-2+0)

NRM F106 Orientation to Natural Resource Management
1 Credit Offered Spring
Overview of career opportunities in natural resources. Includes discussions with research faculty and upper class students involved in various aspects of resource management issues. Graded Pass/Fail. (1+0)

NRM F107 Leaves in Our Lives: Food
1 Credit Offered Spring As Demand Warrants
Learn to appreciate the plants in your life. For gardeners or anyone who eats plants. Plant biology will be introduced from the ground up and related to plant use by human civilizations, especially as food. This course is taught in Palmer. ***Recommended: Placement in ENGL F111X.*** (1+0)

NRM F108 Leaves in Our Lives: Diversity
1 Credit Offered Spring As Demand Warrants
Learn to appreciate the plants in your life. For gardeners or anyone who eats plants. Plant biology and diversity will be introduced and related to plant use by human civilizations, such as food, wood and medicine. This course is taught in Palmer. (1+0)

NRM F109 Leaves in Our Lives and Fungi
1 Credit Offered Spring As Demand Warrants
Learn to appreciate the plants in your life. For gardeners or anyone who eats plants. The biology of plants and fungi will be introduced and related to their use by human civilizations as food and drink. This course is taught in Palmer. ***Recommended: Placement in ENGL F111X.*** (1+0)

NRM F161 Wilderness Leadership Education
3 Credits Offered Summer As Demand Warrants
Introduction to outdoor education. Includes both theoretical and practical exposure to quality judgment and decision-making, environmental education techniques and leadership development in the wilderness setting. Provides detailed exposure to the Wilderness Education Association's 18 essential components of wilderness leadership and backcountry safety. The field portion of the course includes detailed instruction in and mentored experience with modern backcountry travel techniques. Successful completion earns certification in the Wilderness Stewardship Program. Field program requires travel through rough un-trailed terrain with heavy packs and average strength and stamina. No use of alcohol, tobacco, illegal drugs or firearms. Special fees apply. ***Prerequisites: Permission of instructor. Recommended: BIOL F104X, NRM F101 and physical geography.*** (3+0)

NRM F204 Public Lands Law and Policy
3 Credits Offered Fairbanks: Spring; Offered Palmer:
Background on selected federal lands management legislation and agency policies affecting resources conservation, development and preservation. (3+0)

NRM F211 Introduction to Applied Plant Science
3 Credits Offered Fall
Basic principles and requirements for plant growth and development with special attention to the production and management of field and greenhouse grown crops. (2+3)

NRM F212 Greenhouse Management
3 Credits Offered Spring
The greenhouse as a controlled environment for research, education and commercial production of plants; the physical environment; environmental controls and monitors; plant cultivation techniques and crop scheduling useful in plant science and commercial production. (3+0)

NRM F215 Plant Propagation
3 Credits Offered Fall
Principles and practices of plant propagation useful in horticulture, botany, forestry, agronomy, revegetation projects and plant research. Emphasis on both macro- and micro-propagation (tissue culture) of Alaska native plants by seeds, spores and vegetative propagules such as cuttings. ***Prerequisites: NRM F211 or Intro to Biology or Botany or permission of instructor.*** (2+3)

NRM F251 Silvics and Dendrology
4 Credits Offered Spring
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. ***Prerequisites: BIOL F115X; BIOL F116X; BIOL F271; or permission of instructor.*** (3+3)

NRM F277 Introduction to Conservation Biology
3 Credits Offered Spring
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 F115X; BIOL F116X.*** Cross-listed with BIOL F277. (3+0)

NRM F290 Resource Management Issues at High Latitudes
2 Credits
Broad perspective of high latitude resource management issues. On-site analyses of resource management needs, opportunities and/or conflicts in agriculture, forestry, mining, seafood, petroleum, recreation and tourism. Includes 10 day field trip at the end of spring semester. Students must provide own sleeping gear, rain gear and hiking boots. Students must be able to hike forest trails and camp under conditions of inclement weather. May be repeated for credit with instructor's permission. Special fees apply. ***Prerequisite: Permission of instructor.*** (2+0)

NRM F300 Internship in Natural Resources Management and Geography
1-6 Credits Offered As Demand Warrants
Supervised pre-professional experience in a business or agency (public or private). Open to students majoring or minoring in natural resources management and geography only. Course may be repeated for credit up to a maximum of 6 credits. ***Prerequisites: NRM F101 for natural resources management majors or GEOG F101 for geography majors; junior standing with 3.0 GPA; permission of instructor and an approved internship plan.*** Cross-listed with GEOG F300. (1-6+0)

NRM F303X Environmental Ethics and Actions (h)
3 Credits Offered Spring
Exploration of the history of modern Western views of the relationship between people and nature, alternative foundations for an environmental ethic (utilitarianism, spiritual activity, rights-based and respect-based ethics) and practices of such ethics in business, profession and general lifestyle today. ***Prerequisites: Junior standing; placement in ENGL F111X or higher; or permission of instructor.*** (3+0)

NRM F304 W,O Perspectives in Natural Resources Management
3 Credits Offered Fall
Analysis of philosophical/ethical, economic, scientific and political foundations of diverse natural resource management perspectives. ***Prerequisites: COMM F131X or COMM F141X; NRM F101; junior standing; or permission of instructor.*** (3+0)

NRM F312 Introduction to Range Management
3 Credits Offered Fall Even-numbered Years
Applied ecological treatment of soil, plant and grazing animal relationships on uncultivated lands. Origin of the discipline, management practices and important rangelands of North America; emphasis on Alaska's rangelands and

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grazers. ***Prerequisites: BIOL F115X; BIOL F116X; BIOL F239; or permission of instructor. Recommended: NRM F320; NRM F321.*** (3+0)

NRM F313 **Introduction to Plant Pathology**
4 Credits Offered Spring Odd-numbered Years
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 F115X; BIOL F116X. Recommended: BIOL F239.*** (3+3)

NRM F320 **Animal Science**
3 Credits Offered Fall Even-numbered Years
Introduction to the various disciplines that form the study of animal science. Topics include animal nutrition, physiology of reproduction and lactation, genetics and animal breeding, animal behavior, environmental physiology, animal health and welfare. Information is presented as it applies to traditional and non-traditional livestock species with emphasis on applications pertinent to Alaska. ***Prerequisites: BIOL F115X; BIOL F116X.*** (2+3)

NRM F338 **Introduction to Geographic Information Systems**
3 Credits Offered Fall
Geographic data concepts including mapping systems, data sources, editing data, GIS analysis and computer mapping. Introduction to global positioning systems. GIS applications in natural resources management. ***Prerequisites: Knowledge of PC's or Unix workstations desirable.*** Cross-listed with GEOG F338. (2+3)

NRM F340 **Natural Resources Measurement and Inventory**
3 Credits Offered Fall
Techniques and instrumentations used to measure and inventory natural resources, including land, timber, range, wildlife, water and recreation resources. ***Prerequisites: Junior standing or permission of instructor.*** (2+3)

NRM F361 **Advanced Wilderness Leadership Education**
3 Credits Offered Summer, As Demand Warrants
The natural environment, concentrating on outdoor leadership, environmental ethics, minimum impact camping, forest and arctic natural history, and adaptable judgment and decision-making. Includes hiking through boreal forest and along tundra ridges, river crossing, glacier ascent, and skills to do these activities safely. Other mediums of travel could include sea kayaks, canoes or rock climbing. Three lecture sessions will preview a demanding educational field program of 5-15 days requires travel through rough un-trailed terrain with heavy packs or boats and average strength and stamina. No use of alcohol, tobacco, illegal drugs or firearms. ***Prerequisites: NRM F101 or equivalent; NRM F161 or equivalent; permission of instructor. Recommended: NRM/GEOG F463 and NRM F465.*** (3+0)

NRM F365 **Principles of Outdoor Recreation Management**
3 Credits Offered Fall
Theories, practices, economics and problems fundamental to the use of land and related natural resources for recreation. The course focuses on human dimension related issues faced by recreation managers and research to address those issues. ***Prerequisites: NRM F101; junior standing; or permission of instructor.*** (3+0)

NRM F369 **GIS and Remote Sensing for Natural Resources**
3 Credits Offered Spring Even-Numbered Years
Introduces the principles and terminology of natural resources, ecosystem management and landscape ecology while developing analytical skills using spatial technologies consisting of geographic information systems, remote sensing, and global positioning systems. ***Prerequisites: NRM F338 Recommended: NRM F312*** (1.5+1.5)

NRM F370 **Introduction to Watershed Management**
3 Credits Offered Fall
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 F101 and GEOS F101X or permission of instructor.*** (2+3)

NRM F375 **Forest Ecology**
3 Credits Offered Fall
Basic forest ecology concepts, including physical (wind, temperature, water, etc.), biotic (population and community dynamics), genetic successional and landscape dynamics. Basic physiological characteristics of trees, succession, vegetation classification, and related concepts. Stand structure, diversity, competition, growth, forest-soil interactions, biomass, nutrient distribution and dynamics, energy relations, ecology of disturbances. How this basic information can be used in development of wise management plans for forest ecosystems. ***Prerequisites: NRM F251.*** (3+0)

NRM F380 W **Soils and the Environment**
3 Credits Offered Fall
Soil development and classification; physical and chemical properties; biological activity; water movement and nutrient cycling in natural and manipulated ecosystems. ***Prerequisites: CHEM F105X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** (2+3)

NRM F405 W **Senior Thesis in Natural Resources Management I**
2 Credits
Problem-solving with emphasis on writing and analysis. Individual project under the guidance of faculty sponsor involving formulation of a question in natural resources management and preparation of a formal, comprehensive written report. Thesis proposal, presentation and research. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; NRM core; junior standing.*** (2+0)

NRM F406 W **Senior Thesis in Natural Resources Management II**
2 Credits
Problem-solving with emphasis on writing and analysis. Individual project under the guidance of faculty sponsor involving formulation of a question in natural resources management and preparation of a formal, comprehensive written report. Final thesis and presentation. ***Prerequisites: NRM F405 and permission of instructor.*** (2+0)

NRM F407 **Environmental Law**
3 Credits Offered Spring Odd-numbered Years
The role of common law theory in regulatory, statutory and constitutional interpretation in the field of environmental protection, including air and water pollution, toxic/hazardous substances and land-use regulation. ***Prerequisites: Junior or senior class standing or permission of instructor.*** (3+0)

NRM F410 **Numerical Methods for Natural Resources Management**
4 Credits Offered Fall
Teaches the most up-to-date numerical methods for natural resources managers and researchers. Labs cover important computer skills to help students excel in modern natural resources management. ***Recommended: MATH F314*** (3+3)

NRM F430 **Resource Management Planning**
3 Credits Offered Spring
Application of planning and conflict resolution principles to natural resources management. Examines plans prepared in response to current Alaska resource disputes, including wolf, brown bear, boreal forest and recreation river plans. Includes public involvement, consensus building, the basic steps in the planning process and resource dispute simulations. Review resource management plans and develop plans for a local resource management issue. ***Prerequisites: Senior standing or permission of instructor.*** Stacked with NRM F630. (3+0)

NRM F435 **GIS Analysis**
4 Credits Offered Spring
GIS analysis of natural resources including spatial query, attribute query, vector, grid, image, topographic and network analysis techniques. Cross-listed with GEOG F435. (3+3)

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NRM F440 Silviculture
3 Credits Offered Fall Even-numbered Years
Provides an understanding of the science and art of forest stand management. Silviculture is the theory and practice of controlling forest establishment, composition, structure and growth of forests. For persons in land management, including timber, woodlot, wildlife habitat, streamside and aesthetics. ***Prerequisites: BIOL F271; NRM F251; junior standing; or permission of instructor.*** (2+3)

NRM F450 Forest Management
3 Credits Offered Spring Odd-numbered Years
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 and decision making. ***Prerequisites: ECON F235 or equivalent; NRM F251; NRM F340; or permission of instructor.*** (3+0)

NRM F452 Forest Health and Protection
3 Credits Offered Spring Even-numbered Years
Principles and practical management systems for protecting forests from fire, insects and diseases. Factors in managing forest ecosystems and problems and techniques important in high latitude forests, especially in Alaska. ***Prerequisites: BIOL F115X; BIOL F116X; BIOL F239; BIOL F271; NRM F251; or permission of instructor.*** (3+0)

NRM F453 Harvesting and Utilization of Forest Products
3 Credits Offered Fall Odd-numbered Years
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. Introduction to supply and demand of forest products from a world, state and local perspective. Labs include visits to local forest products companies, chainsaw safety and wood identification. ***Prerequisites: NRM F101 or permission of instructor.*** (2+3)

NRM F459 Boreal Forest Management and Soils
1 Credit Offered Summer Even-numbered Years; As Demand Warrants
Field trip in the Tanana Valley to focus on forest management and soils. Includes sites from Fairbanks to Northway and south to the Alaska Range. Includes soils of aeolian, glacial, fluvial and residual landforms, supporting conifer, mixed conifer-hardwood and hardwood forests. Includes wildfire sites, young plantations, immature forest stands, mature forest, subalpine and thermokarst sites. Requires appropriate clothing/foot gear; provide own camping gear (sleeping bag, bedroll); able to walk on uneven or rocky ground through brush; physically fit for long days and field work. Graded Pass/Fail. Special fees apply. ***Prerequisites: Soils course; ecology course; B.S. in Agriculture or Natural Resources; or permission of instructor.*** Stacked with NRM F659. (0.5+0+30)

NRM F461 Interpretive Services
3 Credits Offered As Demand Warrants
Naturalist and other visitor programs in outdoor recreation areas: philosophy, planning and development of interpretive programs; resources, agencies, users, interpretive media and program evaluation. ***Prerequisites: Junior standing or permission of instructor.*** (3+0)

NRM F463 Wilderness Concepts
3 Credits Offered Fall
Discovery of wilderness concepts, including the history and evolution of wilderness thought, the contemporary meaning of wilderness and survey of economic and noneconomic wilderness values for individuals and society. Cross-listed with GEOG F463. Stacked with GEOG F663; NRM F663. (3+0)

NRM F464 Wilderness Management
3 Credits Offered Spring
Wilderness ecology and land management practices on lands designated as wilderness. Analysis of visitor management regimes. Both national and international views of wilderness are presented. ***Prerequisites: A basic course in ecology, resource management, or permission of instructor.*** Cross-listed with GEOG F464. (3+0)

NRM F465 Survey Research in Natural Resources Management
3 Credits Offered Spring Even-numbered Years
Research methods to support research and planning in recreation and human dimensions of natural resources management. Course topics include quantitative theories and concepts that have been applied to study human dimensions of natural resource management, study design, survey development and administration, sampling and data analysis. ***Prerequisites: ECON F235 or equivalent; NRM F101; or permission of instructor.*** (3+0)

NRM F466 Environmental Soil Chemistry
3 Credits Offered Spring Odd-numbered Years
Basic principles of soil chemical processes. Covers soil solution chemistry; precipitation/dissolution and soil colloids; soil solid phase; soil acidity/alkalinity; adsorption and ion exchange; reduction/oxidation reactions; and kinetics of soil chemical processes. In the lab students will operate equipment for soil chemical analysis, experience computer simulation models for soil chemistry and become familiar with the terms and approaches for writing technical reports. ***Prerequisites: CHEM F105X; CHEM F106X; NRM F380.*** (2+3)

NRM F480 Soil Management for Quality and Conservation
3 Credits Offered Fall Odd-numbered Years
Managing soil in disturbed and natural ecosystems to reduce soil losses and maintain or improve soil quality. Methods for maintaining soil quality, preserving soil against loss from erosion, remediating contaminated soil and reclaiming degraded soils. ***Prerequisites: NRM F380.*** (3+0)

NRM F482 Why do Boreal Forests Matter?
1 Credit Offered Summer; As Demand Warrants
Introduction to the importance of boreal forests. Includes presentations by scientists and professionals, readings, and first-hand observations of components and process at work in the forest. Course is for non-forestry professionals and non-forestry majors. (Note: Be prepared for the typical demands of a field situation. Requires walking short distances over rough, uneven and wet terrain. Appropriate clothing is required.) Graded Pass/Fail. (0.5+1)

NRM F485 Soil Biology
3 Credits Offered Spring Even-numbered Years
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.*** (3+0)

NRM F487 W,O Fisheries Management
3 Credits Offered Spring
Theory and practice of fisheries management, with an emphasis on strategies utilized for the management of freshwater and marine fisheries. Application of quantitative methodologies for the assessment and manipulation of aquatic habitats, sport and commercial fish populations, and stock assessment are considered, as is the setting of appropriate goals and objectives for effective, science-based management. ***Prerequisites: BIOL F271; COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; ENGL F414; FISH F425; FISH F405 or FISH F410; or permission of instructor.*** Cross-listed with FISH F487. (3+0)

NRM F488 Land Management of Ecosystems
3 Credits Offered Spring, As Demand Warrants
Natural resource topics related to the management of the terrestrial environment in regions such as the Pacific Northwest, Hawaii and the circumpolar North. A basic understanding of the ecology of a specific region is presented prior to a spring break field trip designed to give the student a broad understanding of important topics affecting the management of important natural resources in the selected region. Special fees apply. ***Prerequisites: NRM F211; NRM F277; NRM F375 or BIOL F271.*** Stacked with NRM F688. (3+0+40)

NRM F489 Alaska Soil Geography Field Trip
1 Credit Offered Summer; As Demand Warrants
Soil geography along ecological transect in selected areas of Alaska. Hands-on experiences on soil morphology and exposure of the relationships between soil

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genesis and other ecological factors including vegetation, geology, landform, climate and hydrology. Includes discussion of soil classification and land use interpretations. Student must provide their own camp gear, be able to walk on uneven or rocky ground and be physically fit for field work. Graded Pass/Fail. Special fees apply. ***Prerequisites: NRM F380, or a course in soils, or permission of instructor.*** Stacked with NRM F689. (1+0)

NRM F601 Research Methods in Natural Resources Management
2 Credits Offered Fall
Introduction for graduate students to the research methods employed in the various fields of resource management, including agriculture, forestry, ecology and social sciences. Designed to acquaint students with the relationship between theory and research, the nature of scientific inquiry, approaches to research, the sequence of steps involved in scientific investigation and the presentation of research results. ***Prerequisites: Graduate standing or permission of instructor.*** (2+0)

NRM F613 Resilience Internship
2 Credits Offered Fall
Students of the Resilience and Adaptation Program participate in internships to broaden their interdisciplinary training, develop new research tools and build expertise outside their home disciplines. Internships are for eight to ten weeks of full-time commitment and take place during the student's first summer in the program. In the autumn students meet to discuss their internship experiences and make public presentations. ***Prerequisites: ANTH/BIOL/ECON/NRM F667; or ANTH/BIOL/ECON/NRM F668; or permission of instructor.*** Cross-listed with ANTH F617; BIOL F613; ECON F613. (2+0)

NRM F616 Ecological Background for Resilience and Adaptation
1 Credit Offered Fall
Provides the ecological background that is necessary for understanding the role of ecology in complex systems involving interactions among biological, economic, and social processes. Designed for incoming students of the Resilience and Adaptation Program (RAP), who have not received training in ecology. ***Prerequisites: Graduate student enrollment or permission of instructor.*** Cross-listed with BIOL F616. (1+0)

NRM F630 Resource Management Planning
3 Credits Offered Spring
Application of planning and conflict resolution principles to natural resources management. Examines plans prepared in response to current Alaska resource disputes, including wolf, brown bear, boreal forest and recreation river plans. Includes public involvement, consensus building, the basic steps in the planning process, and resource dispute simulations. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with NRM F430. (3+0)

NRM F634 Resource Management in Developing Countries
2 Credits Offered Spring
Complex relationship between sustainable development and the social, economic and environmental conditions in low income countries of the "Global South." Through lectures, readings, films and structured discussions, we examine major contemporary issues facing low-income societies (e.g. urbanization, migration, agricultural development, deforestation, water shortages, rural poverty, gender and development, environmental degradation and sustainable development). Case study readings will draw upon empirical research from Latin America, Africa and Asia. (2+0)

NRM F637 Evolution of Conservation Concepts and Policy
3 Credits Offered Spring
Resource policy issues development and implementation including forestry, mining, fisheries, oil, wildlife and other topics as demand warrants. Focus on policy issues involved in management of Alaska's resources. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with ECON F637. (3+0)

NRM F638 GIS Programming
3 Credits Offered Spring Odd-numbered Years
GIS programming for ArcView, Arc/Info and ArcGIS. Programming techniques for customizing GIS, efficient batch processing, and development of custom tools for GIS display and analysis. ***Prerequisites: NRM F338 or equivalent.*** (3+0)

NRM F641 Natural Resource Applications of Remote Sensing
4 Credits Offered Spring Even-numbered Years
Application of remote sensing for inventory and analysis of natural resources. Topics include aerial photography applications and digital remote sensing, including image display, rectification, classification and accuracy assessment. ***Prerequisites: NRM F338 or equivalent.*** (3+3)

NRM F647 Global to Local Sustainability
3 Credits Offered Fall
Explores the basic principles that govern resilience and change of ecological and social systems. Principles are applied across a range of scales from local communities to the globe. Working within and across each of these scales, students address the processes that influence ecological, cultural and economic sustainability, with an emphasis on northern examples. ***Prerequisites: Graduate standing in a natural science, social science, humanities or interdisciplinary program at UAF; and permission of instructor.*** Cross-listed with ANTH F647; BIOL F647; ECON F647. (3+0)

NRM F649 Integrated Assessment and Adaptive Management
3 Credits Offered Spring
Interdisciplinary exploration of theoretical and practical considerations of integrated assessment and adaptive management. Concepts important in understanding societal and professional-level decision-making. Students work as individuals and as a team to undertake case studies with relevance to integrated assessment and adaptive management. Collectively, the class builds a portfolio of cases and conducts an integrated assessment. ***Prerequisites: Graduate student standing in a natural science, social science, humanities or interdisciplinary program at UAF or another university or permission of instructor. The course is designed to fit into the sequence of the Resilience and Adaptation program's core courses. It is open to other graduate students interested in and prepared to conduct interdisciplinary studies relating to sustainability. Recommended: ANTH/BIOL/ECON/NRM F647 and ANTH/BIOL/ECON/NRM F667 (previously or concurrently). In case of enrollment limits, priority will be given to graduate students in the Resilience and Adaptation program in order for them to be able to meet their core requirements.*** Cross-listed with ANTH F649; BIOL F649; ECON F649. (3+0)

NRM F651 Advanced Silviculture
3 Credits Offered Spring Odd-numbered Years
Examines biological and environmental aspects of silviculture. Addresses stand manipulation from the "silvicultural system" approach and includes regeneration, vegetation management, stand tending, "harvest" with considerations for biodiversity, "old- growth," wildlife habitat and timber production. Ecological classification, landscape management and pre-harvest silvicultural prescriptions will be addressed. Must be able to participate in one weekend field trip. ***Prerequisites: Graduate standing and permission of instructor.*** (3+0)

NRM F659 Boreal Forest Management and Soils
1 Credit
Field trip in the Tanana Valley to focus on forest management and soils. Includes sites from Fairbanks to Northway and south to the Alaska Range. Includes soils of aeolian, glacial, fluvial and residual landforms, supporting conifer, mixed conifer-hardwood and hardwood forests. Includes wildfire sites, young plantations, immature forest stands, mature forest, subalpine and thermokarst sites. Requires appropriate clothing/foot gear; provide own camping gear (sleeping bag, bedroll); able to walk on uneven or rocky ground through brush; physically fit for long days of field work. Graded Pass/Fail. Special fees apply. ***Prerequisites: Soils course; ecology course; B.S. degree in Agriculture or Natural Resources; or permission of instructor.*** Stacked with NRM F459. (0.5+0+30)

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NRM F663 **Wilderness Concepts**
3 Credits Offered Fall
History and evolution of wilderness thought, the contemporary meaning of wilderness, and survey of economic and noneconomic wilderness values for individuals and society. Cross-listed with GEOG F663. Stacked with NRM F463; GEOG F463. (3+0)

NRM F665 **Advanced Outdoor Recreation**
3 Credits Offered Fall Even-numbered Years
Evaluation of contemporary outdoor recreation management models and the linkage between management programming and visitor response. Development of a synthesized model and testing with contemporary problems. ***Prerequisites: Graduate standing.*** (3+0)

NRM F667 **Resilience Seminar I**
1 Credit Offered Fall
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research that are relevant to sustainability. A considerable portion of the seminar is student-directed, with students assuming leadership in planning seminar activities with the instructor. Graded Pass/Fail. ***Prerequisites: Must be enrolled in the Resilience and Adaptation graduate program; or permission of instructor. Recommended: ANTH/BIOL/ECON/NRM F647 (taken concurrently).*** Cross-listed with ANTH F667; BIOL F667; ECON F667. (2+0)

NRM F668 **Resilience Seminar II**
1 Credit Offered Spring
Provides a forum for new students of the Resilience and Adaptation graduate program to explore issues of interdisciplinary research that are relevant to sustainability. The seminar provides support to each student planning his/her summer internship and preparing and presenting a thesis research prospectus. Graded Pass/Fail. ***Prerequisites: ANTH/BIOL/ECON/NRM F647; ANTH/BIOL/ECON/NRM F667; or permission of instructor.*** Cross-listed with ANTH F668; BIOL F668; ECON F668. (2+0)

NRM F670 **Biometeorology**
3 Credits Offered Fall Odd-numbered Years
Radiation and energy balance relationships for natural and modified surfaces; physical environment in relation to biology and ecology of plants and animals; implications for resource and environmental management. ***Prerequisites: Biological or physical science background; graduate standing; or permission of instructor.*** (3+0)

NRM F672 **Nutrient Cycling**
3 Credits Offered Spring Odd-numbered Years
Examination of physical, chemical and biological processes controlling nutrient element recycling, availability and retention in natural and managed ecosystems. ***Prerequisites: BIOL F271; CHEM F106X; NRM F380; or permission of instructor.*** (3+0)

NRM F675 **Theoretical Forest Ecosystem Science**
3 Credits Offered Spring Even-numbered Years
Theoretical concepts of forest ecosystem dynamics including theoretical developments in the description of plant growth, ecosystem productivity, decomposition and plant carbon allocation. Development of a model using the basic theoretical constructs. ***Prerequisites: Undergraduate major in biological sciences or renewable resources including at least one course in ecology, one approved college-level mathematics course and graduate standing; or permission of instructor.*** (3+0)

NRM F676 **Interdisciplinary Modeling of High Latitude Global Change**
4 Credits Offered Fall Even-numbered Years
Introduces students to approaches to modeling how regional and global environmental change influences biological and social systems in high latitudes and how the responses of these systems influence the regional and global functioning of the earth system. ***Prerequisites: STAT F200X or equivalent; graduate standing; or permission of instructor.*** Cross-listed with BIOL F676. (3+3)

NRM F680 **Marine Sustainability Internship**
2 Credits Offered Fall
Internship program in marine ecosystem sustainability to broaden students' interdisciplinary training, develop new research tools, build expertise outside their home discipline, gain exposure to careers and gain a unique perspective on research problems. Internships are for a minimum of 8 weeks and take place during the summer. In the autumn students report on and meet to discuss their internship experiences. ***Prerequisites: MSL F652 or permission of instructor.*** Cross-listed with FISH F680, MSL F680 and ANTH F680.(0+0+5-16)

NRM F685 **Soil Microbiology and Biochemistry**
3 Credits Offered As Demand Warrants
Current topics in soil microbiology and biochemistry. Based on readings from the primary literature and discussions in class. Each student will be expected to lead at least one discussion, write a research proposal and present the proposal to class. ***Prerequisites: At least one course in soil science; one course in microbiology; or permission of instructor.*** (3+0)

NRM F688 **Land Management of Ecosystems**
3 Credits Offered Spring, As Demand Warrants
Natural resource topics related to management of the terrestrial environment in regions such as the Pacific Northwest, Hawaii and the circumpolar North. A basic understanding of the ecology of a specific region is presented prior to a spring break field trip designed to give the student a broad understanding of important topics affecting the management of important natural resources in the selected region. Special fees apply. ***Prerequisites: NRM F211; NRM F277; NRM F375 or BIOL F271.*** Stacked with NRM F488. (3+0+40)

NRM F689 **Alaska Soil Geography Field Trip**
1 Credit Offered Summer As Demand Warrants
Soil geography along an ecological transect in selected areas of Alaska. Hands-on experiences with soil morphology and exploration of the relationships between soil genesis and other ecological factors including vegetation, geology, landform, climate and hydrology. Includes discussion of soil classification and land use interpretations. Students must provide their own camp gear, be able to walk on uneven or rocky ground and be physically fit for field work. Graded Pass/Fail. Special fees apply. ***Prerequisites: NRM F380, or a course in soils, or permission of instructor.*** Stacked with NRM F489. (1+0)

NRM F692 **Graduate Seminar**
1-3 Credits
Topics in natural resources management and geography explored through readings, student presentations, group discussions and guest speakers. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with GOEG F692 (0+0+1-3)

NORTHERN STUDIES

For information on studying at McGill University, Montreal, Canada; the University of Copenhagen, Denmark; or opportunity for study in Russia, see Study Abroad.

NORS F205 **Leadership, Citizenship and Choice**
3 Credits
History of democratic principles in America and how people can contribute to political and community life in the local, state and national arenas as leaders and citizens. Examines ethical dilemmas of leadership, and political and social issues facing Alaska and American societies. Course includes an experiential learning component. Cross-listed with PS F205. (3+0)

NORS F425 W **Visual Images of the North**
3 Credits
Examination of the imagery of the people and landscapes of the polar regions, centering on such issues as depiction of arctic peoples and customs by Europeans, documentary versus artistic goals, translations from original sketches to published images, relationship of polar imagery to prevailing

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historical styles and the influence of changing world views on modes of polar representation between the 16th and 20th centuries. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** Cross-listed with ART F425. (3+0)

NORS F432 Literature of Science and the Environment (h)
3 Credits Offered Fall Even-numbered Years
Reading, analysis and discussion of classic and contemporary works in science, natural history and environmental literature. Some semesters all of the readings will follow one theme; other semesters a variety of fiction, poetry, oral tradition and nonfiction will be considered. Readings are selected from a spectrum of opinion on the relationship of people to the natural world and both analytical and creative writing are required. Resource management professionals and students in the sciences and humanities are welcome. May be repeated once for additional credit. ***Prerequisites: Senior standing or permission of instructor.*** Cross-listed with NRM F432. Stacked with NORS F632; NRM F632. (3+0)

NORS F470 Oral Sources: Issues in Documentation (h)
3 Credits
Preparation for recording and use of oral resources. Examines how meaning is conveyed through oral traditions and personal narratives and the issues involved with recording and reproducing narratives. Includes management of oral recordings, ethical and legal considerations, issues of interpretation and censorship, and the use of new technologies to access and deliver recordings. ***Prerequisites: At least one undergraduate ANTH course and one undergraduate HIST course, or permission of instructor.*** Cross-listed with ANTH F470. Stacked with ANTH F670; NORS F670. (3+0)

NORS F484 W,O Seminar in Northern Studies (s)
3 Credits Offered Fall
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. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; junior standing; or permission of instructor.*** (3+0)

NORS F486 Senior Seminar in Leadership and Civic Engagement (s)
3 Credits
Students are placed in contact with government and other agencies where they will gain practical experience applying principles of leadership and civic engagement. This is the capstone course for the minor in leadership and civic engagement. ***Prerequisites: NORS/PS F205. Recommended: The student's elective choices in the minor.*** (3+0)

NORS F600 Perspectives on the North
3 Credits
Basic knowledge of the circumpolar North — the social, economic, political and scientific facets of northern life. Consideration of major cultural groups of the North and their histories, the environmental settings and patterns of settlement and development in northern regions and systems of governance in different northern countries. Broad overview of the major policy issues of the North in education, justice, health care, and environmental and wildlife protection. Course is also available online. Cross-listed with HIST F600. (3+0)

NORS F601 Research Methods and Sources in the North
3 Credits
Development of students' research skills so they can engage in their own research on northern issues. Includes techniques of interviewing, conducting surveys, and sampling; qualitative and quantitative methods of research design; and familiarity with library sources and archival records. Each student will develop a research project. Course is also available online. (3+0)

NORS F603 Public Policy
3 Credits Offered Spring Even-numbered Years
The processes of policy development, implementation and change are analyzed along with major policy frameworks and models used in contemporary political science. These frameworks and models will be applied to environmental sustainability and other social policy issues. Students will develop expertise in a specific policy area and skills in research design preparing them to analyze public policy. ***Prerequisites: Graduate Standing.*** Cross-listed with PS F603. Stacked with PS F403. (3+0)

NORS F610 Northern Indigenous People and Contemporary Issues
3 Credits Offered Fall Odd-numbered Years
Comparative examination of issues affecting northern indigenous people from Alaska, Canada, Greenland and Russia. Issues include the impact of the alienation of land on which these people depend; the relationships between their small, rural microeconomies and the larger agroindustrial market economies of which they are a part; education, language loss and cultural transmission; alternative governmental policies toward indigenous peoples and contrasting world views. ***Prerequisites: Graduate standing or upper-division standing with permission of instructor.*** Cross-listed with ANTH F610. (3+0)

NORS F611 Environmental History
3 Credits Offered Spring Even-numbered Years
Discussion of significant works of environmental history. Cultural history of the landscape in world civilization with emphasis on Western Europe and North America. Discussion of interdisciplinary approaches to the history of environment and cooperative work across disciplines. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with HIST F411. (3+0)

NORS F613 Wilderness and Environmental Psychology
3 Credits
Examines the relationships between people and the natural and built environments. Topics include the effects of arctic environments on physical and psychological health; preferences for different types of natural settings; the design of residential and community environments in northern climates; and the symbolism of settings and effects on political controversies. ***Prerequisites: Graduate standing.*** (3+0)

NORS F616 Performance Studies Abroad
6 Credits
Intensive course for actors, directors, designers, technicians and playwrights interested in script development/training with the participation of international theatre professionals. Develop new scripts and performances in a multicultural environment under the supervision of a theatre faculty member. Previous faculty and student work abroad includes: Russia, Zambia, South Africa and Scandinavia. Course requirements vary according to the project. Stacked with THR F416. (3+9)

NORS F620 Images of the North
3 Credits
Emphasis on the variety of images created about the people and environment of the circumpolar North. Examination and interpretation of conceptualizations of the North as expressed in such different media as film, art, literature, travel journals and oral traditions. Cross-listed with ENGL F620. (3+0)

NORS F624 Field Artists of the North
3 Credits Offered As Demand Warrants
Study of field artists and their work, from the explorer artists of yesteryear to today's field artists using a variety of traditional and contemporary media in their creations. Students will conceive and conduct their own study projects, producing a body of work that will demonstrate the principles and practice of a field artist. ***Prerequisites: ART F105; studio art course (ART F161, ART F162, ART F163, ART F205, ART F211, ART F213 or JRN F203.)*** Cross-listed with ART F624. Stacked with ART F424. (3+0)

NORS F625 Visual Images of the North
3 Credits
Examination of the two-dimensional imagery of the people and landscapes of the polar regions, centering on such issues as depiction of arctic peoples and customs by Europeans, documentary vs. artistic goals, translations from original sketches to published images, relationship of polar imagery to prevailing

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historical styles, and the influence of changing world views on modes of polar representation between the 16th and 20th centuries. Cross-listed with ART F625. (3+0)

NORS F627 Polar Geography
3 Credits Offered Spring
Comparative physical, cultural, political and economic geography of the Circumpolar North and Antarctic regions. Special attention given to Arctic natural resource and climate change in both polar regions. ***Prerequisites: GEOG F101 or GEOG F203 or GEOG F111X; or permission of instructor.*** Stacked with GEOG F427; NORS F427. Stacked with GEOG F627. (3+0)

NORS F632 Literature of Science and the Environment
3 Credits
Reading, analysis and discussion of classic and contemporary works in science, natural history and environmental literature. Some semesters all of the readings will follow one theme; other semesters a variety of fiction, poetry, oral tradition and nonfiction will be considered. Readings are selected from a spectrum of opinion on the relationship of people to the natural world and both analytical and creative writing are required. Resource management professionals and students in the sciences and humanities are welcome. May be repeated once for additional credit. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with NRM F632. Stacked with NRM F432; NORS F432. (3+0)

NORS F640 Ethics and Reporting in the Far North
3 Credits
Historical overview of media coverage of the Northern frontier with focus on journalistic ethics. A comparison is made to the media climate in Third World countries. Cross-listed with JRN F640. Stacked with JRN F440. (3+0)

NORS F647 U.S. Environmental Politics
3 Credits Offered Spring
U.S. political institutions as they relate to making policies for protecting the quality of the natural environment. The politics of nuclear waste, endangered species, air and water pollution, and wilderness preservation. Analysis of the National Environmental Policy Act, sustainable development, limits to growth and other topics. Course is also available online. ***Prerequisites: Graduate Standing or permission of instructor.*** Cross-listed with PS F647. Stacked-with: PS F447. (3+0)

NORS F648 Environmental Politics of the Circumpolar North
3 Credits
Overview of how environmental politics and policy as a field of study relates to the Arctic region. Analysis of various threats to the northern environment, focusing on the policy making institutions at selected Arctic Rim nations, as well as strategies to deal with environmental problems in an international context. Course is also available online. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with PS F648. Stacked-with: PS F448. (3+0)

NORS F652 International Relations of the North
3 Credits
Examination of the international strategies of circumpolar states. Consideration of theoretical and practical elements of strategy formation in major issue areas such as national security, the political economy, human rights and scientific exchange. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with PS F652. Stacked with PS F452. (3+0)

NORS F653 Greenland: Home Rule and Self-determination
3 Credits
The history and political economy of Greenland with emphasis on development of the Home Rule government. Highlights Greenland's dynamic relationship with the world economy and efforts of the Home Rule government to pursue sustainable development. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

NORS F654 International Law and the Environment
3 Credits
International environmental law. Includes international case law regulating the sea, airspace, outer space and the polar regions; comprehensive international regulatory and legal instruments to protect the environment (e.g. the U.N. Framework Convention on Climate Change); and the doctrines, principles, and rules of international law that are basic to an understanding of international legal regimes and the environment. Course is also available online. ***Prerequisites: Graduate standing; permission of instructor. Recommended: Undergraduate course in international law, organization or politics.*** Cross-listed with PS F654. Stacked with PS F454. (3+0)

NORS F655 Political Economy of the Global Environment
3 Credits
Interactions between basic aspects of the global economy (international trade, investment and development) and the natural environment. Topics include the economic impact of global environmental agreements and the environmental impact of global markets, transnational corporations and development assistance by organizations such as the World Bank. ***Prerequisites: Graduate standing and permission of instructor.*** Cross-listed with PS F655. Stacked with PS F455. (3+0)

NORS F656 Science, Technology, and Politics
3 Credits
Relationship of science, technology and politics. Connections among scientific knowledge, technology, technological innovations, politics and power. Gender roles and the influence of western science. Both historical and comparative aspects are included. Course is also available online. ***Prerequisites: Graduate standing or permission of instructor. Recommended: PS F101.*** Cross-listed with PS F656. Stacked with PS F456. (3+0)

NORS F658 Comparative Environmental Politics
3 Credits
Enduring issues of the field of comparative politics and their relation to global environmental problems. Biodiversity, transboundary pollution capacity, political processes and organizations, and international commitments all potentially shape the nature and dynamics of global environmental politics and vice versa. Course is also available online. ***Prerequisites: Graduate standing or permission of instructor. Recommended: PS F201 or equivalent comparative politics course.*** Cross-listed with PS F658. Stacked with PS F458. (3+0)

NORS F660 Government and Politics of Canada
3 Credits Offered Spring Odd-numbered Years
The Canadian political system, covering the Canadian constitution, federal structure, parliamentary government and public policy, as well as contemporary issues concerning Native rights and the Canadian North. Students will complete a major research paper on specific policy areas. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with PS F660. Stacked with PS F460. (3+0)

NORS F661 History of Alaska
3 Credits Offered Fall
Alaska from prehistoric times to the present, including major themes such as Native Alaska, colonial and military Alaska, statehood, Alaska Native Claims Settlement Act of 1971 and the Alaska National Interest Lands Act of 1980. Also available via Independent Learning. Cross-listed with HIST F662. Stacked with HIST F461. (3+0)

NORS F662 Alaska Government and Politics
3 Credits Offered Spring Odd-numbered Years
Alaska's government and politics, in the context of American state and local government, and politics and governments of circumpolar northern nations. Topics include political history, constitution, political parties, interest groups, elections, public opinion, governor, legislature, judiciary, administration and local governments. Compares Alaska to the contiguous 48 states and subnational governments of the circumpolar North; examines how government institutions and processes respond to social, environmental and political changes

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of northern communities. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with PS F662. Stacked with PS F462. (3+0)

NORS F663 Foundation of Russian History
3 Credits Offered Fall Even-numbered Years
The foundations of Russian society and the modern Russian state from the earliest recorded events through the early 19th century. Topics include the Scythians and Khazars, the rise of the Kievan state, Mongol domination of Russia, the rise of Muscovy, the creation of the Russian Empire under the Romanov dynasty, ethnic and social diversity, the impact of the Napoleonic invasion and the influence of western European ideas in Russia. ***Prerequisites: HIST F275; or permission of instructor.*** Cross-listed with HIST F663. Stacked with HIST F463. (3+0)

NORS F664 Modern Russia
3 Credits Offered Fall Even-numbered Years
Russia from the early 19th century to the present. Themes include politics, culture and society in the Russian Empire, the Russian Revolution, the Soviet Union and the Russian Federation. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with HIST F664. Stacked with HIST F464. (3+0)

NORS F668 Government and Politics of Russia
3 Credits Offered Spring Odd-numbered Years
Current developments in Russia from a number of perspectives. The effect of history and geography on political change; the nature of Russian government and society; the legacies of Lenin, Stalin, Gorbachev, and the ideological nature of regimes and leadership. Economic forces and the political struggle in governance; revolution, democracy and reform; and the international role of Russia, particularly in relation to the former Soviet republics, Eastern Europe and other border areas. ***Prerequisites: PS F201; graduate standing or permission of instructor.*** Cross-listed with PS F668. Stacked with PS F468. (3+0)

NORS F670 Oral Sources; Issues in Documentation
3 Credits Offered Fall
Preparation for recording and use of oral resources. Examines how meaning is conveyed through oral traditions and personal narratives and the issues involved with recording and reproducing narratives. Includes management of oral recordings, ethical and legal considerations, issues of interpretation and censorship, and the use of new technologies to access and deliver recordings. ***Prerequisites: At least one undergraduate ANTH course and one undergraduate HIST course, or permission of instructor.*** Cross-listed with ANTH F670. Stacked with ANTH F470; NORS F470. (3+0)

NORS F672 Culture and History in the North Atlantic
3 Credits Offered Spring Odd-numbered Years
Ancient Norse culture and society. Includes readings of Old Norse poetry and Icelandic sagas in translation, with secondary analyses and archaeological background. Includes Greenlandic myths and contemporary ethnographic accounts of Iceland, Greenland and the Faroe Islands. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with ANTH F672. Stacked with ANTH F472. (3+0)

NORS F680 Comparative Education
3 Credits Offered Fall
Focus on the comparative study and analysis of international systems of public education. National issues to be addressed include social context, gender, ideology, international power, level of development, current issues and problems, and efforts toward reform. National systems to be studied include Japan, the People's Republic of China and a variety of other national or cross-national studies to be completed by course participants. Cross-listed with ED F680. (3+0)

NORS F681 Polar Exploration and its Literature
3 Credits Offered Spring Odd-numbered Years
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. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with HIST F681. Stacked-with: HIST F481. (3+0)

NORS F683 20th Century Circumpolar History
3 Credits Offered Spring Even-numbered Years
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. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with HIST F683. Stacked-with: HIST F483. (3+0)

NORS F687 Alaska Research Resources
2 Credits Offered Spring
Find, use and evaluate primary sources in the Alaska and Polar Regions Department of the Rasmuson library over the Internet. Student pursues own topics and findings may be used to support research in other courses. Stacked with LS F487. (2+0)

NORS F690 Researching and Writing Northern History
3 Credits Offered Spring Odd-numbered Years
Exploration of the craft and methodology of historical research in the North. Course may be repeated for credit when content varies. ***Prerequisites: Graduate standing; or permission of instructor.*** Cross-listed with HIST F690. Stacked with HIST F490. (1+3)

OCCUPATIONAL SAFETY AND HEALTH

A per-semester fee for upgrade of equipment, instructional aids and supplies will be assessed for one or more OSH classes.

OSH F108 Injury Prevention and Risk Management
4 Credits Offered Fall
Course identifies safety, health management and incident prevention in the workplace. Emphasis on materials handling, electrical and machine safety, first response to fire and medical emergencies, safety and health hazards, and accident prevention. Special fees apply. (3+2)

OSH F110 Program Assessments, Development and Implementation
4 Credits Offered Fall
Examines the role of a safety program in the workplace. Emphasis on program assessment, design, development, implementation and evaluation of safety programs. Special fees apply. (4+0)

OSH F120 Safety Program Management and Recordkeeping
3 Credits Offered Spring
The role of safety in the business community. Emphasis on philosophy of safety and health efforts by management. Examines the role of the safety manager and the types of and need for accurate recordkeeping. Special fees apply. ***Prerequisites: OSH F110.*** (3+0)

OSH F180 Introduction to Industrial Hygiene
4 Credits Offered Spring
Acute and chronic health effects of exposures to chemical, physical and biological agents in the workplace. Emphasizes types of exposure and biological effects, exposure guidelines and basic workplace monitoring. Special fees apply. ***Prerequisites: PRT F110.*** (3+2)

OSH F201 Workplace Injury and Incident Evaluations
4 Credits Offered Spring
Assessing and evaluating workplace hazards. Investigation of worker complaints and actual health and safety incidents. Includes practical applications and basic accident investigation case studies. Special fees apply. ***Prerequisites: OSH F108.*** (4+0)

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OSH F250 **Hazardous Material Operation**
3 Credits Offered Spring
Identifies the policies, procedures and equipment needed to deal with hazardous materials. Emphasizes the types of hazards, planning, organization and training needed to work safely with hazardous materials. Special fees apply. ***Prerequisites: OSH F180.*** (2+2)

PARALEGAL STUDIES

PLS F102 **Introduction to the Law**
3 Credits
Sources of law in the American tripartite system of government, with emphasis on state and federal court systems. Substantive law is studied, including administrative law, business organization, civil procedure, contract, criminal, employment, family, probate, real estate and tort law. Introductory instruction in legal writing and legal research using the law library and Westlaw. (3+0)

PLS F103 **Introduction to Paralegal Skills**
3 Credits
Introduction to the skills required of a paralegal in the job market, including drafting legal documents, pleadings and office correspondence, fact gathering through interviewing and investigating, use of the Internet for legal research, pretrial procedures, focusing primarily on civil rules 30, 33, 34, 35 and 36, and assisting at trial. (3+0)

PLS F105 **Introduction to Paralegal Ethics**
2 Credits
Introduction to the ethical obligations owed by both lawyers and paralegals to their clients, other lawyers, the court systems where they work and the general public. Alaska Rules of Professional Conduct and the canons of ethics promulgated by the two nationwide paralegal associations. (2+0)

PLS F203 **Torts**
3 Credits Offered Spring
Study of the essentials needed to effectively assist an attorney in the filing or defense of claims based on personal injury and property damage. A basic vocabulary of legal terminology associated with tort law is studied together with important statutes and case law. Emphasis on Alaska law. ***Prerequisites: PLS F102; PLS F103; PLS F105; or permission of instructor.*** (3+0)

PLS F210 **Civil Procedure**
3 Credits Offered Fall
Basic vocabulary and concepts essential to effectively assist an attorney with the procedural aspects of civil litigations. ***Prerequisites: PLS F102; PLS F103; PLS F105; or permission of instructor.*** (3+0)

PLS F213 **Criminal Law for Paralegals**
3 Credits Offered Spring
Study of both the substantive criminal law and the rudiments of criminal procedure, focusing on both Alaska law and procedure and important constitutional considerations associated with due process, search and seizure and Fifth Amendment rights. Learn and work with a basic vocabulary unique to criminal law and procedure. Note: Does not substitute for JUST F352. ***Prerequisites: PLS F102; PLS F103; PLS F105; or permission of instructor.*** (3+0)

PLS F215 **Contracts/Real Property**
3 Credits Offered Fall
Basic vocabulary and concepts essential to effectively assist an attorney with the preparation of contracts and real property transactions. ***Prerequisites: PLS F102; PLS F103; PLS F105; or permission of instructor.*** (3+0)

PLS F240 **Family Law**
3 Credits Offered Spring
Basic vocabulary and concepts essential to understanding family law and assisting a practicing attorney. ***Prerequisites: PLS F102; PLS F103; PLS F105; or permission of instructor.*** (3+0)

PLS F242 **Employment and Administrative Law**
3 Credits Offered Spring
Legal principles which define the relationship between employers and employees. Includes obligations imposed by Federal and Alaska state statutes and administrative regulations. Includes how administrative agencies are created and how they provide administrative law through promulgation of rules and regulations and through quasi-judicial decisions. ***Prerequisites: PLS F102; PLS F103; PLS F105; or permission of instructor.*** (3+0)

PLS F250 **Probate Law**
3 Credits Offered Fall
Basics of probate law and the uniform probate code. Includes the preparation and interpretation of wills, administration of decedent's estates, intestate succession laws, guardianships and other related probate matters. Focus on Alaska statutes and probate rules. ***Prerequisites: PLS F102; PLS F103; PLS F105; or permission of instructor.*** (3+0)

PLS F260 **Computers in the Law Office**
3 Credits Offered Spring
Introduction to the role of computers in the law office. Includes hardware and software. Use of word processors, spreadsheets, databases, computer-assisted legal research, the Internet and electronic mail, and litigation support, case management and bookkeeping/billing software. ***Prerequisites: PLS F102; PLS F103; PLS F105; CIOS F150; or permission of instructor.*** (3+0)

PLS F275 **Business Organizations**
3 Credits Offered Fall
Benefits and shortcomings of the three basic business forms: corporation, partnership, and sole proprietorship. How to form each business form, how to operate it according to relevant laws and regulations, and how to dissolve the business. ***Prerequisites: PLS F102; PLS F103; PLS F105; or permission of instructor.*** (3+0)

PLS F280 **Legal Research and Writing for Paralegals**
3 Credits Offered Spring
Legal research skills using law library methods, LexisNexis and the Internet. Read and understand authorities from three branches of government: executive, legislative and judicial. Emphasis on precedent from Alaska and federal court systems. Includes writing skills from drafting of law office correspondence to preparation of court pleadings and briefs. (3+0)

PLS F285 **Advanced Legal Writing**
2 Credits Offered Spring
Expand on writing skills previously learned by drafting documents regularly assigned to practicing paralegals. For example, pleadings to be filed in court, legal documents, such as contracts, wills and those used by business organizations, office correspondence, deposition summaries and interoffice legal memorandums. ***Prerequisites: PLS F102; PLS F103; PLS F105; PLS F280.*** (2+0)

PLS F299 **Paralegal Studies Internship**
3 Credits
An internship involving a minimum of 150 hours of work under the supervision of an attorney, and, when available, a practicing paralegal for that attorney in a local law office or law-related situation. Must seek approval of faculty advisor for admittance. Note: Students meet as a class only once. All subsequent classes or meetings with UAF faculty advisor are arranged by individual student(s) and advisor. ***Prerequisites: Must have completed at least 75% of paralegal studies degree requirements with a minimum 2.8 cumulative GPA or approval of UAF faculty advisor.*** (3+0)

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PETROLEUM ENGINEERING

A per-semester student computing facility user fee is assessed for CEM engineering courses. This fee is in addition to any lab/material fees.

PETE F103 **Survey of the Energy Industries**
1 Credit Offered Fall
Overview of global energy supply and demand, alternate energy options, Alaska alternate energy resources and impact on the state economy. (1+0)

PETE F104 **Fundamentals of Petroleum**
1 Credit Offered Spring
Fundamental principles on the origin, migration, accumulation and exploration of petroleum. Influence of rock and fluid properties on the principles of petroleum recovery. (1+0)

PETE F205 **Fundamentals of Drilling Practices**
1 Credit Offered Fall
Fundamental principles of drilling, drilling practices, drilling fluids and drilling problems dependent on mud control. ***Prerequisites: PETE F104 or permission of instructor.*** (1+0)

PETE F206 **Introduction to Petroleum Production**
1 Credit Offered Spring
Overview of production practices, surface production equipment, special production problems and workover and petroleum transportation. ***Prerequisite: PETE F205 or permission of instructor.*** (1+0)

PETE F211 **Drilling Laboratory**
1-2 Credits Offered Spring
Measurement of physical properties of drilling mud. Optional BOP certification and drilling rig operation experience during spring break. ***Prerequisites: PETE F205 or permission of instructor.*** (0+3 or 6)

PETE F301 **Reservoir Rock and Fluid Properties**
4 Credits Offered Fall
Fundamental concepts of reservoir rock and fluid properties including porosity, permeability, fluid saturations, capillary pressure, relative permeabilities, classification of petroleum reservoirs by fluid phase contents, oil, gas and water properties, fluid sampling, and PVT analysis. ***Prerequisites: MATH F201X; ES F346; GEOS F101X or GE F261.*** (4+0)

PETE F302 **Well Logging**
3 Credits Offered Spring
Comprehensive treatment of modern well logging methods including formation and production logging tools, and techniques and basic concepts of log interpretation. ***Prerequisites: PETE F205; junior standing in engineering or geoscience; or permission of instructor.*** (3+0)

PETE F303 W **Reservoir Rock and Fluid Properties Laboratory**
1 Credit Offered Spring
Measurement of properties of reservoir rock and reservoir fluids. Determination of porosity, permeability, fluid saturations, capillary pressures, specific gravity density, viscosity, surface tension, PVT properties and interpretation of PVT reports for reservoir fluid samples. Special fees apply. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; PETE F301.*** (0+3)

PETE F370 **Sedimentology and Structural Geology for Petroleum Engineers** (n)
4 Credits Offered Fall Odd-numbered Years
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. ***Prerequisites: GEOS F101X or GE F261.*** Cross-listed with GEOS F370. (3+3)

PETE F407 **Petroleum Production Engineering**
3 Credits Offered Fall
Production system analysis, inflow performance analysis, gas lift design, sucker rod pumping and production decline analysis. ***Prerequisites: ES F341 and ES F346.*** (3+0)

PETE F411 W **Drilling Fluids Laboratory**
1 Credit Offered Spring
Design, composition and measurement of drilling fluid properties, evaluation of mud activities and chemical treatment of contaminated drilling fluid. Special fees apply. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; PETE F205; concurrent enrollment in PETE F426.*** (0+3)

PETE F421 **Reservoir Characterization**
3 Credits Offered Spring
Reservoir rock properties and their spatial variations; estimation of reserves; introduction to theory and application of geostatistics to reservoir characterization; presentation of fundamental geostatistical concepts including: variogram analysis, estimation variance, kriging and stochastic simulations. Impact of geologic structure on oil recovery methods. ***Prerequisites: PETE F301; PETE F302; GEOS F370.*** Stacked with PETE F621. (3+0)

PETE F426 **Drilling Engineering**
3 Credits Offered Spring
Principles of drilling, drilling fluids and rheology, drilling problems, drilling hydraulics, well control techniques and casing seat selection. ***Prerequisites: ES F331; ES F341.*** (3+0)

PETE F431 **Natural Gas Engineering**
2 Credits Offered Fall
Natural gas production and condensate reservoirs. Design of processing, transportation, distribution and flow measurement systems. ***Prerequisites: PETE F301.*** (2+0)

PETE F456 **Petroleum Evaluation and Economic Decisions**
3 Credits Offered Spring
Economic appraisal methods for oil field developmental project evaluations including risk analysis, probability and statistics in decision making and evaluations. Case studies. ***Prerequisites: MATH F202X and PETE F476.*** (3+0)

PETE F458 **Petroleum Engineering Internship**
1 Credit Offered As Demand Warrants
Practical experience in a supervised petroleum engineering environment. Participation in professional petroleum operations including drilling, production, formation evaluation, reservoir engineering, petroleum property evaluation, management and economics. Written and oral presentation of technical report describing experience is required. Course may be repeated for up to 4 credits. ***Prerequisites: Junior standing or permission of instructor.*** (0+0)

PETE F466 **Petroleum Recovery Methods**
3 Credits Offered Fall
Flow and physicochemical principles of oil recovery by water, chemical, thermal and miscible floods. Prediction of recovery for each of these methods. ***Prerequisites: PETE F301 and PETE F476.*** (3+0)

PETE F476 **Petroleum Reservoir Engineering**
3 Credits Offered Spring
Quantitative study and prediction of the behavior of oil and gas reservoirs under primary, secondary and tertiary recovery mechanisms. ***Prerequisites: PETE F301.*** (3+0)

PETE F478 **Well Test Analysis**
2 Credits Offered Spring
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 F407; PETE F476; MATH F302.*** (2+0)

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PETE F481 W **Well Completions and Stimulation Design**
3 Credits Offered Fall
Design of casing programs, cementing, open-hole and set-through completions, well stimulation; completion and workover fluids; and evaluation of sand control and workover operations. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; ES F341; PETE F205; PETE F426.*** (2+3)

PETE F487A **Petroleum Project Design**
1 Credit Offered Fall
Two-semester course with emphasis on design and analysis of petroleum exploration, production and reservoir engineering systems by analytical, experimental and computer methods. Identification of requirements, conceptual and detailed project design and cost analysis. Completion of an engineering project. Note: Oral communication intensive and writing intensive credits are earned upon successful completion of PETE F487B. Special fees apply. ***Prerequisites: Senior standing.*** (2+0)

PETE F487B W,O **Petroleum Project Design**
1 Credit Offered Spring
Two-semester course with emphasis on design and analysis of petroleum exploration, production and reservoir engineering systems by analytical, experimental and computer methods. Identification of requirements, conceptual and detailed project design and cost analysis. Completion of an engineering project. Special fees apply. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; senior standing.*** (2+0)

PETE F489 **Reservoir Simulation**
2 Credits Offered Spring
The theory and use of computer reservoir simulation in petroleum reservoir and production engineering. Special fees apply. ***Prerequisites: PETE F476; MATH F310 or ES F301.*** (2+0)

PETE F607 **Advanced Production Engineering**
3 Credits Offered As Demand Warrants
Production system analysis, production optimization, downhole equipment design, surface facilities design, oil and gas processing, gas and oil treating systems, disposal well systems, project organization and field development. Special fees apply. ***Prerequisites: Graduate standing, PETE F407 or equivalent; or permission of instructor.*** (3+0)

PETE F610 **Advanced Reservoir Engineering**
3 Credits Offered As Demand Warrants
Concepts and tools for solving petroleum reservoir engineering problems; advances in petroleum reservoir engineering. Emphasis on material balance methods and their application to estimate reserves and calculate water influx; diversity equations and solutions; gas and water coning; streamline tracking; and decline curve analysis, productivity index and well performance models for vertical, horizontal and multilateral wells. Special fees apply. ***Prerequisites: PETE F476 or permission of instructor.*** (3+0)

PETE F621 **Applied Reservoir Characterization**
3 Credits Offered As Demand Warrants
Review of reservoir rock properties and their spatial variations; estimation of reserves; introduction to theory and application of geostatistics to reservoir characterization; presentation of fundamental geostatistical concepts including: variogram analysis, estimation variance, kriging and stochastic simulations. Impact of geologic structure on oil recovery. Use of computer software for reservoir characterization and class project. Special fees apply. ***Prerequisites: Graduate standing in Petroleum Engineering; or permission of instructor.*** Stacked with PETE F421. (3+0)

PETE F630 **Water Flooding**
3 Credits Offered As Demand Warrants
A study of the fundamental concepts and procedures for the design of waterflooding processes in petroleum reservoirs. Special fees apply. ***Prerequisites: PETE F301; PETE F476; or permission of instructor.*** (3+0)

PETE F656 **Advanced Petroleum Economic Analysis**
3 Credits Offered As Demand Warrants
Economic analysis of petroleum production leading towards increasing cost efficiency in the petroleum and related industries. Qualitative and quantitative description of production forecasts and reserve estimation; oil and gas pricing; cash flow analysis; risk and uncertainty of operation of oil and gas production (financing, debt/equity ratio, depreciation and taxation). Special fees apply. ***Prerequisites: PETE F407, PETE F456; or permission of instructor.*** (3+0)

PETE F661 **Applied Well Testing**
3 Credits Offered As Demand Warrants
Equations for transient flow of single phase fluids through porous media, extension to sample multiphase flow, isolated and developed multi-well flow, conventional drawdown and buildup analysis, log-log type curve analysis, interference testing, fractured wells, pulse tests, and drill stem tests. Special fees apply. ***Prerequisites: PETE F476; PETE F610; or permission of instructor.*** (3+0)

PETE F662 **Enhanced Oil Recovery**
3 Credits Offered As Demand Warrants
Secondary and tertiary oil recovery processes, including waterflooding and chemical and thermal recovery methods. Special fees apply. ***Prerequisites: PETE F476 or PETE F610 or permission of instructor.*** (3+0)

PETE F663 **Applied Reservoir Simulation**
3 Credits Offered As Demand Warrants
Mathematical description of the reservoir, organization of reservoir simulation study, history matching and prediction for several published case studies of reservoir simulations. Special fees apply. ***Prerequisites: Reservoir Engineering course - e.g. PETE F476 or PETE F610 or permission of instructor.*** (3+0)

PETE F665 **Advanced Phase Behavior**
3 Credits Offered As Demand Warrants
The development and application of phase equilibrium simulators to predict fluid properties for reservoir fluids. Special fees apply. ***Prerequisites: PETE F301 or permission of instructor.*** (3+0)

PETE F666 **Drilling Optimization**
3 Credits Offered As Demand Warrants
Principles of drilling optimization: drilling cost analysis and control; rheological properties of drilling fluid for optimum hole cleaning; planning an optimum mud program for vertical, directional and horizontal wellbores; optimizing bit hydraulics. Use of software packages in optimized hydraulics. Special fees apply. ***Prerequisites: Graduate standing in engineering discipline or permission of instructor.*** (3+0)

PETE F670 **Fluid Flow Through Porous Media**
3 Credits Offered As Demand Warrants
The study of transport phenomena in porous media and application to petroleum engineering. Special fees apply. ***Prerequisites: PETE F301; PETE F476; or permission of instructor.*** (3+0)

PETE F680 **Horizontal Well Technology**
3 Credits Offered As Demand Warrants
Review of the state of the art of horizontal well technology covering recent advances in drilling and completion of horizontal wells. Emphasis on field practices, reservoir engineering aspects including well testing and well performance estimation, application of horizontal wells to gas and water coning problems as well as enhanced oil recovery. Special fees apply. ***Prerequisites: PETE F426; PETE F476; or permission of instructor.*** (3+0)

PETE F683 **Natural Gas Processing and Engineering**
3 Credits Offered As Demand Warrants
Natural gas reservoir engineering and gas production practices. Transient flow of real gases, gas field development, gas well testing, transportation and gas storage reservoirs. Special fees apply. ***Prerequisites: PETE F431; PETE F476; or permission of instructor.*** (3+0)

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PETE F685 **Non-Newtonian Fluid Mechanics**
3 Credits Offered As Demand Warrants
Characteristics of stress in fluids, flow models of non-Newtonian fluids (Bingham plastic fluids, fluids without yield stress), couette flow analysis of non-Newtonian fluids, surge and swab pressure models for plugged and open-end pipes. Special fees apply. ***Prerequisites: ES F341; PETE F426 or permission of instructor.*** (3+0)

PETE F689 **Multiphase Fluid Flow in Pipes**
3 Credits Offered As Demand Warrants
Multiphase flow in pipes, modeling of fluid flow of complex mixtures in pipes, empirical correlations developed in the literature, and calculation of pressure gradients and flow rates during the flow of multiphase fluids through vertical, inclined and horizontal pipes. Special fees apply. ***Prerequisites: ES F341; MATH F310 or ES F301; PETE F407; or permission of instructor.*** (3+0)

PHILOSOPHY

PHIL F102 **Introduction to Philosophy** (h)
3 Credits
Survey of philosophers and problems in the Western tradition beginning with the ancient Greeks (Plato, Aristotle) and continuing with medieval (Anselm, Augustine, Aquinas) and modern European thinkers (Descartes, Hume, Kant, Nietzsche). Themes and topics may vary. (3+0)

PHIL F104 **Logic and Reasoning** (h)
3 Credits Offered Fall
Principles of deductive and inductive logic and application of the principles to critical thinking in logic and its application. (3+0)

PHIL F108 **Science, Critical Thinking and Pseudoscience** (h)
3 Credits Offered Spring Odd-numbered Years
Examines the difference between science and pseudoscience, making use of the tools of critical thinking to understand what counts as knowledge. Examples are drawn from evolutionary theory, creationism, astronomy, astrology, history, race theory and Holocaust revisionism. ***Prerequisites: PHIL F102 or permission of instructor.*** (3+0)

PHIL F110 **Introduction to Political Philosophy** (h)
3 Credits Offered Fall Odd-numbered Years
Introduction to historical and contemporary issues in political thought. Topics and themes vary, but include questions such as: Should we consent to be governed? What is civil society? What does it mean to be a citizen? What are the basic forms of government? (3+0)

PHIL F202 **Introduction to Eastern Philosophy** (h)
3 Credits Offered Spring
Basic assumptions, problems and systems of the major philosophical traditions of the Far East. ***Prerequisites: PHIL F102 or permission of instructor.*** (3+0)

PHIL F322X **Ethics** (h)
3 Credits
"Ethic," — from the Greek "ethos" meaning character, custom, usage — is the study of value distinctions. Examination of the nature of value judgments — their historical origins and philosophical assumptions — and exploration of the application of value distinctions to contemporary social, religious and scientific/technical issues. Also available via Independent Learning. ***Prerequisites: Placement in ENGL F111X or higher; junior standing; or permission of instructor. Recommended but not required: Two courses in the Perspectives on the Human Condition baccalaureate core.*** (3+0)

PHIL F341 O **Theories of Knowledge** (h)
3 Credits Offered Fall Even-numbered Years
The nature of knowledge, truth and certainty. ***Prerequisites: COMM F131X or COMM F141X; PHIL F102.*** (3+0)

PHIL F342 **Theories of Reality** (h)
3 Credits Offered Spring Even-numbered Years
Theories of reality and their relationship to science, philosophy and religion. ***Prerequisites: PHIL F102.*** (3+0)

PHIL F351 **History of Ancient Greek Philosophy** (h)
3 Credits Offered Fall
Review of the philosophy of Plato and Aristotle; minor attention to Presocratics. ***Prerequisites: PHIL F102 or its equivalent.*** (3+0)

PHIL F352 **History of Modern Philosophy: Descartes to Kant** (h)
3 Credits Offered Spring
Review of continental rationalist and British empiricist thought, 17th - 19th centuries. ***Prerequisites: PHIL F102 or its equivalent. Recommended: PHIL F351 strongly recommended.*** (3+0)

PHIL F353 **Survey of Buddhist Thought** (h)
3 Credits
Survey of the major themes and schools of Buddhist thought. Emphasis on the interactions with surrounding cultures and competing philosophical systems. Includes modern developments in India, China, Japan, Tibet and other parts of Asia. ***Prerequisites: Upper class standing or permission of instructor.*** (3+0)

PHIL F361 **Philosophy in Literature** (h)
3 Credits Offered As Demand Warrants
Examination of philosophical issues in literary works. Topics include the nature of free will, the effects of choice in building a character, the desirable (and undesirable) ways of confronting morality, and the nature of evil. Topics and readings vary. (3+0)

PHIL F362 **Feminist Philosophy** (h)
3 Credits Offered As Demand Warrants
Examination of contemporary feminist philosophical positions. Emphasis on feminist ethics, social and political philosophy, and epistemology. Cross-listed with WGS F362. (3+0)

PHIL F363 W **Philosophy of Religion** (h)
3 Credits Offered As Demand Warrants
Introduction to topics such as arguments for the existence and nature of God, the problem of evil, the relation of faith and reason, religious language and the connection of religion to the meaning of life. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor. Recommended: PHIL F102 and upper-division status.*** (3+0)

PHIL F402 W **Biomedical and Research Ethics** (h)
3 Credits Offered Fall
Issues in biomedical ethics. Topics will vary but include discussion of moral principles and problems of research ethics and medical ethics, such as: animal and human experimentation; data management; informed consent; therapeutic and non-therapeutic research; physician/patient relationship; autonomy; assisted reproductive technologies; euthanasia; organ transplantation; and allocation of scarce medical resources. ***Prerequisites: ENGL F111X; either ENGL F211X or ENGL F213X; junior or senior standing; a course in philosophy, science, or nursing; permission of instructor. Recommended: A course in philosophy, science or nursing.*** Cross-listed with BIOL F402. (3+0)

PHIL F411 W,O **Classical Political Theory** (h)
3 Credits Offered Fall Odd-numbered Years
Political ideas from ancient Greece, Rome, and the Judaeo-Christian tradition. Theories of Plato, Aristotle, Cicero, Augustine and Aquinas. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; PHIL F102; PS F101; or permission of instructor.*** Cross-listed with PS F411. (3+0)

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PHIL F412 W **Modern Political Theory** (s)
3 Credits Offered Spring Even-numbered Years
Political ideas from the Renaissance to the modern world. Theories of Machiavelli, Hobbes, Locke, Rousseau, Burke, Marx and Lenin. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL 213X; PHIL F102; PS F101; or permission of instructor.*** Cross-listed with PS F412. (3+0)

PHIL F421 **Aesthetics** (h)
3 Credits Offered Fall Odd-numbered Years
The nature of aesthetic experience in poetry, music, painting, sculpture, architecture and other arts; studies in relation to artistic production and the role of art in society. ***Prerequisites: Junior/senior standing or permission of instructor. Recommended: PHIL F102 or HUM F201X.*** (3+0)

PHIL F471 **Contemporary Philosophical Problems** (h)
3 Credits Offered Fall Even-numbered Years
Ideological issues facing the modern world. ***Prerequisites: PHIL F351; PHIL F352; or permission of instructor.*** (3+0)

PHIL F472 **Ethics in International Affairs** (h)
3 Credits Offered Spring Odd-numbered Years
Examination of questions including: What is in the interest of the nation-state according to the logic of statecraft? How does the national interest relate to broader human interest? How does morality relate to the international legal order? Examination is through theory and case studies. ***Prerequisites: PHIL F322X or equivalent or PS F321; or permission of instructor.*** Cross-listed with PS F472. (3+0)

PHIL F481 **Philosophy of Science** (h)
3 Credits Offered As Demand Warrants
Comparison and discussion of various contemporary methodological positions. ***Prerequisites: Junior standing.*** (3+0)

PHIL F482 **Comparative Philosophy and Religions** (h)
3 Credits Offered As Demand Warrants
Review of non-western philosophical thought, e.g., African, Jewish, Latin American, Oriental and others. (3+0)

PHIL F487 **Conceptual Issues in Evolutionary Biology**
3 Credits Offered Spring Odd-numbered Years
Analysis of some of the main models which explain evolutionary change, followed by consideration of the practical implications these models have on the study of biological phenomena in general. Cross-listed with BIOL F487. Stacked with BIOL F687; PHIL F687. (3+0)

PHIL F499 W **B.A. Thesis in Philosophy** (h)
3 Credits Offered As Demand Warrants
Writing the senior thesis in philosophy. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** (1+2)

PHIL F687 **Conceptual Issues in Evolutionary Biology**
3 Credits Offered Spring Odd-numbered Years
Analysis of some of the main models which explain evolutionary change, followed by consideration of the practical implications these models have on the study of biological phenomena in general. Cross-listed with BIOL F687. Stacked with BIOL F487; PHIL F487. (3+0)

PHYSICS

PHYS F102X **Energy and Society** (n)
4 Credits Offered Spring
Exploring the concept of energy. Investigation of the sources, conversion, distribution and ultimate dispersion of energy, as well as the consequences of its use in the development and maintenance of modern society. May be used to fulfill part of the natural science requirement. Designed for non-science majors. Special fees apply. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (3+3)

PHYS F103X **College Physics** (n)
4 Credits Offered Fall
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. Special fees apply. ***Prerequisites: High school algebra, trigonometry and geometry; placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (3+3)

PHYS F104X **College Physics** (n)
4 Credits Offered Spring
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. Special fees apply. ***Prerequisites: PHYS F103X; placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.*** (3+3)

PHYS F115X **Physical Science I** (n)
4 Credits Offered Fall
Basic concepts and general overview in physics. Presents interrelatedness and interdependence within this scientific field. Special fees apply. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor. Recommended: DEVM F105.*** (3+3)

PHYS F116X **Physical Science II** (n)
4 Credits Offered Spring
Basic concepts and general overview in chemistry, astronomy, meteorology and geology. Presents interrelatedness and interdependence of these scientific fields. Special fees apply. ***Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher. Recommended: PHYS F115X; DEVM F105.*** (3+3)

PHYS F175X **Introduction to Astronomy** (n)
4 Credits Offered Fall
Examination of the science of astronomy and its social consequences, with an emphasis on the interrelationships between astronomy and other sciences. Topics covered: astronomical concepts and tools, the solar system, stellar astronomy and cosmology. Designed for non-science majors. Special fees apply. ***Prerequisites: DEVM F105; ENGL F111X; or appropriate placement scores.*** (3+3)

PHYS F211X **General Physics** (n)
4 Credits
Vectors, kinematics, Newton's Laws, momentum, work, energy, rotational motion, oscillations, waves, gravity and fluids. For engineering, mathematics and physical science majors. Special fees apply. ***Prerequisites: Concurrent enrollment in MATH F201X; placement in ENGL F111X or higher; or permission of instructor. Recommended: One year of high school physics.*** (3+3)

PHYS F212X **General Physics** (n)
4 Credits
Heat, temperature, laws of thermodynamics, Coulomb's Law, electrical potential, capacitance, Kirchoff's Laws, Biot-Savart Law, Faraday's Law, and electromagnetic waves. For engineering, mathematics and physical science majors. Special fees apply. ***Prerequisites: Concurrent enrollment in MATH F202X; PHYS F211X or ES F208 or concurrent enrollment in ES F210; placement in ENGL F111X or higher; or permission of instructor.*** (3+3)

PHYS F213X **Elementary Modern Physics** (n)
4 Credits Offered Fall
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. Special fees apply. ***Prerequisites: Placement in ENGL F111X or***

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higher; C or better in MATH F201X and MATH F202X; PHYS F211X; PHYS F212X; or permission of instructor. (3+3)

PHYS F220 Introduction to Computational Physics
4 Credits Offered Spring
Introduction to computational techniques for solving physics problems. The computer is used as a tool to provide insight into physical systems and their behavior in all areas of physics. Special fees apply. *Prerequisites: MATH F202X; PHYS F211X; PHYS F212X; PHYS F213X; or permission of instructor.* (3+3)

PHYS F301 Introduction to Mathematical Physics
4 Credits Offered Spring
Introduction to theoretical foundations of classical and modern physics. Includes calculus of vector fields, linear algebra and elementary tensor theory, complex analysis, ordinary linear differential equations, linear partial differential equations, Fourier analysis and probability. Physical applications include planetary motion, rotating bodies and inertia tensor, damped and driven harmonic oscillator, wave equation, Schrödinger's equation and diffusive systems. *Prerequisites: PHYS F211X; PHYS F212X; PHYS F213X; MATH F202X; or permission of instructor.* (4+0)

PHYS F313 Thermodynamics and Statistical Physics
4 Credits Offered Spring
Thermodynamic systems, equations of state, the laws of thermodynamics, changes of phase, thermodynamics of reactions, kinetic theory and introduction to statistical mechanics. *Prerequisites: PHYS F212X; concurrent enrollment in PHYS F301; or permission of instructor.* (4+0)

PHYS F341 Classical Physics I: Particle Mechanics
4 Credits Offered Fall
Newtonian mechanics, conserved mechanical quantities, motion of systems of particles, rigid body statics and dynamics, moving and accelerated coordinate systems, rigid body rotations and Lagrangian mechanics. *Prerequisites: PHYS F211X; PHYS F212X; PHYS F220; PHYS F301; or permission of instructor.* (4+0)

PHYS F342 Classical Physics II: Electricity and Magnetism
4 Credits Offered Spring
Statics and dynamics of electric and magnetic fields in vacuum and in the presence of materials. Lorentz force law. Maxwell's equations. *Prerequisites: PHYS F341 or permission of instructor.* (4+0)

PHYS F343 Classical Physics III: Vibration and Waves
4 Credits Offered Fall
Normal modes and small vibrations, continuum systems, wave mechanics, electromagnetic waves and radiation. Relativistic mechanics and electromagnetism. *Prerequisites: PHYS F342 or permission of instructor.* (4+0)

PHYS F381 W,O Physics Laboratory (n)
3 Credits Offered Fall
Laboratory experiments in classical and modern physics. Special fees apply. *Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; PHYS F213X; or permission of instructor.* (1+6)

PHYS F382 W Physics Laboratory (n)
3 Credits Offered Spring
Laboratory experiments in classical and modern physics. Special fees apply. *Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; PHYS F381; or permission of instructor.* (1+6)

PHYS F413 Atmospheric Radiation
3 Credits Offered Fall Odd-numbered Years
Atmospheric radiation including the fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds and radiation climatology. *Prerequisites/Co-requisites: ATM F401.* Stacked with PHYS F613; cross listed with ATM F413 (3+0)

PHYS F421 Quantum Mechanics
4 Credits Offered Fall
Schrödinger's equation, Born interpretation, operator formalism, measurement and projection, stationary states, one-dimensional systems, hydrogen atom, states of definite angular momentum, perturbation theory. *Prerequisites: PHYS F213X; PHYS F220; PHYS F301; or permission of instructor.* (4+0)

PHYS F462 Geometrical and Physical Optics (n)
4 Credits Offered Spring
Geometrical optics, interference and diffraction theory, nonlinear optics, Fourier optics, and coherent wave theory. Special fees apply. *Prerequisites: PHYS F213X; PHYS F301; or permission of instructor.* (3+3)

PHYS F471A Advanced Topics in Physics I: Condensed Matter Physics I
1 Credit
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. *Prerequisites: PHYS F220; PHYS F301; or permission of instructor.* (1+0)

PHYS F471B Advanced Topics in Physics I: Condensed Matter Physics II
1 Credit
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. *Prerequisites: PHYS F220; PHYS F301; or permission of instructor.* (1+0)

PHYS F471C Advanced Topics in Physics I: Space and Auroral Physics
1 Credit
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. *Prerequisites: PHYS F220; PHYS F301; or permission of instructor.* (1+0)

PHYS F471D Advanced Topics in Physics I: Nonlinear Dynamics
1 Credit
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. *Prerequisites: PHYS F220; PHYS F301; or permission of instructor.* (1+0)

PHYS F471E Advanced Topics in Physics I: Biophysics
1 Credit
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. *Prerequisites: PHYS F220; PHYS F301; or permission of instructor.* (1+0)

PHYS F471F Advanced Topics in Physics I: Nuclear and Particle Physics
1 Credit
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. *Prerequisites: PHYS F220; PHYS F301; or permission of instructor.* (1+0)

PHYS F471G Advanced Topics in Physics I: General Relativity
1 Credit
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. *Prerequisites: PHYS F220; PHYS F301; or permission of instructor.* (1+0)

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PHYS F471H Advanced Topics in Physics I: Astrophysics
1 Credit
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. ***Prerequisites: PHYS F220; PHYS F301; or permission of instructor.*** (1+0)

PHYS F471I Advanced Topics in Physics I: Topics in Modern Mathematical Physics
1 Credit
Emphasis topics provide increased breadth in basic physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. ***Prerequisites: PHYS F220; PHYS F301; or permission of instructor.*** (1+0)

PHYS F472A Advanced Topics in Physics II: Planetary Atmospheres
1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. ***Prerequisites: PHYS F220; PHYS F301; or permission of instructor.*** (1+0)

PHYS F472B Advanced Topics in Physics II: Fluid Dynamics
1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. ***Prerequisites: PHYS F220; PHYS F301; or permission of instructor.*** (1+0)

PHYS F472C Advanced Topics in Physics II: Plasma Physics
1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. ***Prerequisites: PHYS F220; PHYS F301; or permission of instructor.*** (1+0)

PHYS F472D Advanced Topics in Physics II: Hamiltonian Mechanics
1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. ***Prerequisites: PHYS F220; PHYS F301; or permission of instructor.*** (1+0)

PHYS F472E Advanced Topics in Physics II: Physics of Glaciers
1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. ***Prerequisites: PHYS F220; PHYS F301; or permission of instructor.*** (1+0)

PHYS F472F Advanced Topics in Physics II: Remote Sensing
1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. ***Prerequisites: PHYS F220; PHYS F301; or permission of instructor.*** (1+0)

PHYS F472G Advanced Topics in Physics II: Solar Physics
1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. ***Prerequisites: PHYS F220; PHYS F301; or permission of instructor.*** (1+0)

PHYS F472H Advanced Topics in Physics II: Advanced Laboratory
1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. ***Prerequisites: PHYS F220; PHYS F301; or permission of instructor.*** (1+0)

PHYS F472I Advanced Topics in Physics II: Spectroscopy
1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. ***Prerequisites: PHYS F220; PHYS F301; or permission of instructor.*** (1+0)

PHYS F472J Advanced Topics in Physics II: Cosmology
1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. ***Prerequisites: PHYS F220; PHYS F301; or permission of instructor.*** (1+0)

PHYS F472K Advanced Topics in Physics II: Quantum Computation
1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. ***Prerequisites: PHYS F220; PHYS F301; or permission of instructor.*** (1+0)

PHYS F472L Advanced Topics in Physics II: Covarient Kinematics/Dynamics
1 Credit
Application topics provide expanded exposure to subjects in physics. Three topics are offered within the fall and spring semesters of each academic year as compressed 14-lecture, one-credit courses. ***Prerequisites: PHYS F220; PHYS F301; or permission of instructor.*** (1+0)

PHYS F488 Undergraduate Research
1-3 Credits
Advanced research topics from outside the usual undergraduate requirements. ***Prerequisites: Permission of instructor. Recommended: A substantial level of technical/scientific background.*** (0+0)

PHYS F611 Mathematical Physics
3 Credits Offered Fall
Mathematical tools and theory for classical and modern physics. Core topics: linear algebra including eigenvalues, eigenvectors and inner products in finite dimensional spaces. Infinite series. Hilbert spaces and generalized functions. Complex analysis, including Laurent series and contour methods. Applications to problems arising in physics. Selected additional topics, which may include operator and spectral theory, groups, tensor fields and hypercomplex numbers. ***Prerequisites: MATH F302; MATH F314; MATH F421; MATH F422; or permission of instructor.*** Cross-listed with MATH F611. (3+0)

PHYS F612 Mathematical Physics
3 Credits Offered Spring
Continuation of Mathematical Physics I; mathematical tools and theory for classical and modern physics. Core topics: classical solutions to the principal linear partial differential equations of electromagnetism, classical and quantum mechanics. Boundary value problems and Sturm-Liouville theory. Green's functions and eigenfunction expansions. Integral transforms. Orthogonal polynomials and special functions. Applications to problems arising in physics. Selected additional topics, which may include integral equations and Hilbert-Schmidt theory, perturbation methods and probability theory. ***Prerequisites: PHYS/MATH F611 or equivalent; or permission of instructor.*** Cross-listed with MATH F612. (3+0)

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PHYS F613 Atmospheric Radiation
3 Credits Offered Fall Odd-numbered Years
Fundamentals of blackbody radiation theory and radiative properties of atmospheric constituents. Discussion of gaseous absorption including line absorption, broadening effects and radiative transfer. Includes scattering, radiative properties of clouds, and radiation climatology. ***Prerequisites/co-requisites: ATM F601; graduate standing.*** Stacked with PHYS F413; cross listed with ATM F613. (3+0)

PHYS F614 Ice Physics
3 Credits Offered Spring Even-numbered Years
A survey of the physics of ice, including the crystal structure and properties of ice, high pressure phases, hydrogen bonding, mechanical properties, thermal properties, electrical and acoustic properties, nucleation and growth, optical properties and surface properties (adhesion, friction). ***Prerequisites: MATH F421; MATH F422; graduate standing; or permission of instructor.*** Cross-listed with GEOS F614. (3+0)

PHYS F621 Classical Mechanics
3 Credits Offered Fall Odd-numbered Years
Lagrange's equations, two-body problem, rigid body motion, special relativity, canonical equations, transformation theory, and Hamilton-Jacobi method. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

PHYS F622 Statistical Mechanics
3 Credits Offered Spring Even-numbered Years
Classical and quantum statistics of independent particles, ensemble theory and applications. ***Prerequisites: PHYS F621; graduate standing; or permission of instructor.*** (3+0)

PHYS F626 Fundamentals of Plasma Physics
3 Credits Offered Fall
Single charge particle motion in the electromagnetic fields, plasma kinetic theory, Vlasov equations for collisionless plasmas, magnetohydrodynamic equations, linear plasma waves and instabilities, nonlinear plasma waves and instabilities. ***Prerequisites: Graduate standing; or permission of instructor.*** (3+0)

PHYS F628 Digital Time Series Analysis
3 Credits Offered Spring Even-numbered Years
Applied time series analysis, including correlation, convolution, filtering and spectral estimation of multivariate data. The statistical properties of estimators; signal detection; and array processing. ***Prerequisites: MATH F401; MATH F402 or equivalent; familiarity with a programming language such as C or Fortran; graduate standing; or permission of instructor.*** (3+0)

PHYS F629 Methods of Numerical Simulation in Fluids and Plasma
3 Credits Offered Spring Odd-numbered Years
The fundamentals of computer simulation for fluids and multi-particle systems. Topics include methods for the discretization of numerical solutions, and boundary and initial conditions. Methods will be applied to convection, diffusion, and steady states in fluids and plasmas. ***Prerequisites: Experience in programming; graduate standing; or permission of instructor.*** (3+0)

PHYS F631 Electromagnetic Theory
3 Credits Offered Fall Even-numbered Years
Electrostatics, magnetostatics, Maxwell's equations, and potentials. Lorentz equations, field energy, gauge conditions, retarded potentials, waves, radiation and tensor formulations. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

PHYS F632 Electromagnetic Theory
3 Credits Offered Spring Odd-numbered Years
Electrostatics, magnetostatics, Maxwell's equations and potentials. Lorentz equations, field energy, gauge conditions, retarded potentials, waves, radiation and tensor formulations. ***Prerequisites: PHYS F631 or the equivalent; graduate standing; or permission of instructor.*** (3+0)

PHYS F639 InSar and its Applications
3 Credits Offered As Demand Warrants
Introduction to the concepts of repeat-pass spaceborne SAR interferometry and practical use of the technique to derive displacements of the solid Earth, glaciers, and ice sheets to a precision of a few centimeters and accurate digital elevation models of the Earth's surface. ***Prerequisites: Basic remote sensing course or permission of instructor.*** Cross-listed with GEOS F639. (2+2)

PHYS F640 Auroral Physics
3 Credits Offered Spring Odd-numbered Years
Survey of aurora phenomena, the associated physical processes, and techniques used to investigate the aurora. Includes electron and proton impact spectra; physical processes that accelerate and precipitate electrons and protons; auroral currents; ionospheric effects of auroral activity; and principles for ground-based satellite spectroscopy and imaging and the measurements of magnetic and electric fields. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

PHYS F647 Fundamentals of Geophysical Fluid Dynamics
3 Credits Offered Fall Odd-numbered Years
Introduction to the mechanics of fluid systems, the fundamental processes, Navier-Stokes' equations in rotating and stratified fluids, kinematics, conservation laws, vortex motion, irrotational flow, laminar flow, boundary layer phenomena, waves, instabilities, turbulent flows and mixing. Cross-listed with ATM F647. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

PHYS F648 Nonlinear Dynamics
3 Credits Offered Spring Even-numbered Years
Introduction into the dynamics of nonlinear systems. Continuous and discrete dynamical systems, stability analysis, bifurcations, limit cycle, chaos and strange attractors, fractals and dimension algorithms, controlling chaos, synchronization processes, and stochastic dynamical systems. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

PHYS F650 Aeronomy
3 Credits Offered Fall Even-numbered Years
The physical and chemical processes that govern the response of planetary atmospheres to solar radiation and energetic particles. Formation of and characteristic processes in the layers within the ionosphere and basic magnetoionic theory. Includes principles of remote sensing by lidar and radar techniques. ***Prerequisites: Graduate standing; or permission of instructor.*** (3+0)

PHYS F651 Quantum Mechanics
3 Credits Offered Fall Even-numbered Years
Schrödinger's equations, operator formalism, correspondence principle, central force problems, perturbation theory, quantum statistical mechanics, and applications of quantum mechanics to collision problems, radiation and spectroscopy. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

PHYS F652 Quantum Mechanics
3 Credits Offered Spring Odd-numbered Years
Schrödinger's equations, operator formalism, correspondence principle, central force problems, perturbation theory, quantum statistical mechanics, and applications of quantum mechanics to collision problems, radiation and spectroscopy. ***Prerequisites: PHYS F651 or the equivalent; graduate standing; or permission of instructor.*** (3+0)

PHYS F660 Radiative Transfer
3 Credits Offered As Demand Warrants
The interaction of radiation with matter. The physical processes related to scattering, absorption and emission of radiation in an optical medium as well as the formulation and mathematical solution of radiative energy transport including multiple scattering in layered media. Demonstrations of how to use the theory in remote sensing applications and earth radiation budget studies (climate). ***Prerequisites: Graduate standing in chemistry, geology or physics; or permission of instructor.*** (3+0)

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PHYS F672 **Magnetospheric Physics**
3 Credits Offered Spring Even-numbered Years
The physics and dynamics of Earth's magnetosphere. Discusses the magnetosphere as a test bed for microscopic plasma processes equilibrium configurations, plasma instabilities, highly nonlinear eruptive plasma processes, and global dynamics which involve the interaction of various regions of the magnetosphere. Introduction to various aspects of magnetospheric physics with a systematic discussion of the various elements of the magnetosphere, their structure and dynamics, and a discussion of the relevant plasma physics. ***Prerequisites: PHYS F626; graduate standing; or permission of instructor.*** (3+0)

PHYS F673 **Space Physics**
3 Credits Offered Alternate Fall Odd-numbered Years
Plasma physics of the heliosphere from the solar core to the interstellar medium. Includes coronal structure, interplanetary magnetic field and solar wind, shocks, interactions with planets, planetary magnetospheres, cosmic rays, solar-terrestrial relations and instrumentation. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

POLITICAL SCIENCE

PS F100X **Political Economy** (s)
3 Credits
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. Also available via Independent Learning. ***Prerequisites: Placement in ENGL F111X or higher or permission of instructor.*** Cross-listed with ECON F100X. (3+0)

PS F101 **Introduction to American Government and Politics** (s)
3 Credits
Principles, institutions and practices of American national government; the Constitution, federalism, interest groups, parties, public opinion and elections. Also available via Independent Learning. (3+0)

PS F201 **Comparative Politics** (s)
3 Credits Offered Fall
Introduction to the systematic study of government and politics in countries other than the U.S. Students will explore such questions as why some countries are democracies and other countries dictatorships; why some remain stable and peaceful, while others seem in constant turmoil. This is a prerequisite for other courses in comparative politics. (3+0)

PS F202 **Democracy and Global Society** (s)
3 Credits Offered Spring Even-numbered Years
Examination of the various definitions and types of democracy and the global contexts within which they develop. Cases used draw from a wide range of states, societies and world-historical contexts, and allow comparisons among developed and developing countries. (3+0)

PS F203 **Peace, War and Security** (s)
3 Credits Offered Fall Even-numbered Years
Introduction to the major challenges of maintaining a peaceful and secure world. What are the major threats to our security and how are they met? The course analyzes political, cultural, moral and legal norms surrounding war and terrorism and different means of organizing for peace and security. (3+0)

PS F205 **Leadership, Citizenship and Choice**
3 Credits Offered Spring
History of democratic principles in America and how people can contribute to political and community life in the local, state and national arenas, as leaders and citizens. Examines ethical dilemmas of leadership, and political and social issues facing Alaska and American societies. Course includes an experiential learning component. Cross-listed with NORS F205. (3+0)

PS F212 **Introduction to Public Administration** (s)
3 Credits Offered As Demand Warrants
Theories and practice of public administration, especially as applied to federal agencies. Study of organization, planning and decision making in implementing public policy. (3+0)

PS F222 **Political Science Research Methods** (s)
3 Credits Offered Fall Even-numbered Years
Familiarizes students with the research methods that have been used to produce political knowledge about significant political phenomena. Includes both qualitative and quantitative research methods. ***Prerequisites: PS F101; must be completed before a student advances to senior standing in the discipline.*** (3+0)

PS F263 **Alaska Native Politics** (s)
3 Credits Offered Spring Odd-numbered Years
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. (3+0)

PS F300X **Ethics and Society** (h)
3 Credits
What is the right thing to do? A presentation of important theories of values, morality and ethics. Application of theories to dilemmas of choice in the public world, such as euthanasia, abortion, animal rights, sexual morality and environmental ethics. Also available via Independent Learning. ***Prerequisites: Placement in ENGL F111X or higher; junior standing; or permission of instructor. Recommended: Two courses in the Perspectives on the Human Condition baccalaureate core.*** (3+0)

PS F301 **American Presidency** (s)
3 Credits Offered Fall Even-numbered Years
The institution of the presidency in the American political system. ***Prerequisites: PS F101 or permission of instructor.*** (3+0)

PS F302 **Congress and Public Policy** (s)
3 Credits Offered Spring Odd-numbered Years
The American Congress in the political system. ***Prerequisites: PS F101 or permission of instructor.*** (3+0)

PS F303 **Politics and the Judicial Process** (s)
3 Credits Offered Fall
The role of federal courts as political institutions. The politics of judicial selection, the nature of judicial decision-making and intracourt politics, litigations as a policy making device, changes in the nature and scope of judicial power, governmental attorneys, the legal bureaucracy, and judicial agenda setting. ***Prerequisites: PS F101 or permission of instructor.*** (3+0)

PS F314 W **Political Ideologies** (s)
3 Credits Offered Fall Even-numbered Years
An examination of the purpose of ideology as an orienting set of political ideas with mass appeal. Analysis of 20th century ideologies, including anarchism, communism, liberalism, socialism, environmentalism and feminism. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; PS F101; or permission of instructor.*** (3+0)

PS F315 **American Political Thought** (s)
3 Credits Offered Spring Odd-numbered Years
Political ideas in the U.S. from colonial times to the present: Puritanism, revolutionary ideas, Constitutionalism, nature of the Union, Progressive movement and pragmatism. ***Prerequisites: PS F101 or permission of instructor. Recommended: HIST F131 and HIST F132 strongly recommended.*** (3+0)

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PS F321 **International Politics** (s)
3 Credits Offered Fall
Introduction to the problems, literature and terminology of international relations. Provides a basis for understanding current international affairs. Examines relations between nations, regions and groups, as well as ideas of conflict, security, trade, technology, negotiation, cooperation, revolution, modernization and community. (3+0)

PS F322 O **International Law and Organization** (s)
3 Credits Offered Spring Odd-numbered Years
Case studies in international law (rights and duties of states, jurisdiction and sovereignty, treaties, use of force and adjudication processes); development of regional organizations and integration; the United Nations. ***Prerequisites: COMM F131X or COMM F141X; PS F321; or permission of instructor.*** (3+0)

PS F323 **International Political Economy** (s)
3 Credits Offered Alternate Spring Odd-numbered Years
Exploration of the manner in which political and economic forces interact to affect international flows of goods, money, investments and technology. International political economic relations are examined in several contexts. ***Prerequisites: PS F100X or permission of instructor.*** (3+0)

PS F325 **Native Self-Government** (s)
3 Credits Offered As Demand Warrants
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 F100X; PS F263; or permission of instructor.*** Cross-listed with ANS F325. (3+0)

PS F340 **Women and Politics** (s)
3 Credits Offered Spring Odd-numbered Years
In-depth examination of the relevance of gender in political thought and action. Topics will vary and may include: an historical perspective of political ideas on the nature and status of women; women's involvement in national and/or international political movements and organizations; feminist approaches to the social sciences; feminism as a political ideology. ***Prerequisites: One political science course or permission of instructor. Recommended: WGS F201.*** Cross-listed with WGS F340. (3+0)

PS F401 W **Political Behavior** (s)
3 Credits Offered Spring Even-numbered Years
Attitudes, opinions and beliefs of the American electorate and the impact of these factors on political behavior; role of political organizations (parties and interest groups) in modern American politics. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** (3+0)

PS F403 W,O **Public Policy** (s)
3 Credits Offered Spring Even-numbered Years
The processes of policy development, implementation,and change are analyzed with major policy frameworks and models used in contemporary political science. These frameworks and models will be applied to environmental sustainability and other social policy issues. Students will develop expertise in a specific policy area and complete oral presentations related to their policy interests. ***Prerequisites: PS F101, upper division standing, or permission of instructor.*** Stacked with PS F603. (3+0)

PS F404 **Introduction to Legal Research and Writing**
3 Credits Offered Spring
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 F101 or JUST F110.*** Cross-listed with JUST F404. (3+0)

PS F411 W,O **Classical Political Theory** (h)
3 Credits Offered Fall Odd-numbered Years
Political ideas from ancient Greece, Rome and the Judaeo-Christian tradition. Theories of Plato, Aristotle, Cicero, Augustine, and Aquinas. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; PHIL F102; PS F101; or permission of instructor.*** Cross-listed with PHIL F411. (3+0)

PS F412 W **Modern Political Theory** (s)
3 Credits Offered Spring Even-numbered Years
Political ideas from the Renaissance to the modern world. Theories of Machiavelli, Hobbes, Locke, Rousseau, Burke, Marx and Lenin. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; PHIL F102; PS F101; or permission of instructor.*** Cross-listed with PHIL F412. (3+0)

PS F425 **Federal Indian Law and Alaska Natives** (s)
3 Credits Offered Fall Even-numbered Years
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 F101; HIST F100X; or permission of instructor. Recommended: PS F263.*** Cross-listed with ANS F425. (3+0)

PS F435 W **Constitutional Law I: Federalism** (s)
3 Credits Offered Spring Odd-numbered Years
Constitutional doctrines and historical evolution of federalism and the separation of powers in the United States. Emphasis on the court's role in arbitering intergovernmental and interbranch disputes, the constitutional status of the administrative bureaucracy, and the control of war power and foreign policy. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; PS F101; or permission of instructor.*** (3+0)

PS F436 W **Constitutional Law II: Civil Rights and Liberties** (s)
3 Credits Offered Spring Even-numbered Years
Origin and development of civil rights and civil liberties in the U.S. Emphasis on the social, political and philosophical justifications of rights as expressed in judicial decision and constitutional doctrine. ***Prerequisites: ENGL F111X; ENGL F211X or F213X; PS F101; or permission of instructor. Recommended: PS F303.*** (3+0)

PS F437 **United States Foreign Policy** (s)
3 Credits Offered Spring Even-numbered Years
U.S. foreign policy in the postwar and post cold war period, including development of policy (domestic and foreign influences), administration of political, economic and military policies, and evaluation of policy effectiveness. Analyzes the historical background of the U.S. role in the world today and leading personalities and events that are a part of it. ***Prerequisites: PS F321; or permission of instructor.*** (3+0)

PS F447 **U.S. Environmental Politics** (s)
3 Credits Offered Spring
Examination of U.S. political institutions as they relate to making policies for protecting the quality of the natural environment. The politics of nuclear waste, endangered species, air and water pollution, and wilderness preservation. Analysis of the National Environmental Policy Act, sustainable development, limits to growth and other topics. Course is also available online. ***Prerequisites: Upper-division standing or permission of instructor. Recommended: PS F101.*** Stacked with NORS F647; PS F647. (3+0)

PS F450 **Comparative Indigenous Rights and Policies** (s)
3 Credits Offered As Demand Warrants
Comparative approach to analyzing Indigenous rights and policies in different nation-state systems. Multiple countries and specific policy developments examined for factors promoting or limiting self-determination. ***Prerequisites: Upper division standing or permission of instructor.*** Cross-listed with ANS F450. Stacked with PS F650. (3+0)

PS F452 **International Relations of the North** (s)
3 Credits Offered Spring Odd-numbered Years
Examination of the international strategies of circumpolar states. Consideration of theoretical and practical elements of strategy formation in major issue areas

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such as national security, the political economy, human rights and scientific exchange. ***Prerequisites: Upper-division standing or permission of instructor.*** Stacked with NORS F652; PS F652. (3+0)

PS F454 **International Law and the Environment** (s)
3 Credits
International environmental law. Includes international case law regulating the sea, airspace, outer space and the polar regions; comprehensive international regulatory and legal instruments to protect the environment (e.g. the U.N. Framework Convention on Climate Change); and the doctrines, principles, and rules of international law that are basic to an understanding of international legal regimes and the environment. Course is also available online. ***Prerequisites: Upper-division standing; permission of instructor. Recommended: Undergraduate course in international law, organization, or politics.*** Stacked with NORS F654; PS F654. (3+0)

PS F455 O **Political Economy of the Global Environment** (s)
3 Credits Offered Fall Even-numbered Years
Interaction between basic aspects of the global economy (international trade, investment and development) and the natural environment. Topics include the economic impact of global environmental agreements and the environmental impact of global markets, transitional corporations, and development assistance by organizations such as the World Bank. ***Prerequisites: COMM F131X or COMM F141X; upper-division standing; permission of instructor.*** Stacked with NORS F655; PS F655. (3+0)

PS F456 O **Science, Technology, and Politics** (s)
3 Credits Offered Spring Odd-numbered Years
Relationship of science, technology and politics. Connections among scientific knowledge, technology, technological innovations, politics and power. Gender roles and the influence of western science. Both historical and comparative aspects are included. Course is also available online. ***Prerequisites: COMM F131X or COMM F141X; upper-division standing or permission of instructor. Recommended: PS F101.*** Stacked with NORS F656; PS F656. (3+0)

PS F458 **Comparative Environmental Politics** (s)
3 Credits Offered Fall Odd-numbered Years
Enduring issues of the field of comparative politics and their relation to global environmental problems. Biodiversity, transboundary pollution, and climate warming. Explores how state-society relations, political institutions, national political capacity, political processes and organizations, and international commitments potentially shape the nature and dynamics of global environmental politics and vice versa. Course is also available online. ***Prerequisites: Upper-division standing; or permission of instructor. Recommended: PS F201 or equivalent comparative politics course.*** Stacked with NORS F658; PS F658. (3+0)

PS F460 W **Government and Politics of Canada** (s)
3 Credits Offered Spring Odd-numbered Years
The Canadian political system, covering the Canadian constitution, federal structure, parliamentary government and public policy, as well as contemporary issues concerning Native rights and the Canadian North. Students will complete a major research paper on specific policy areas (language, education, health care, environment, natural resources, foreign relations). ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; PS F201; upper-division standing; or permission of instructor.*** Stacked with NORS F660; PS F660. (3+0)

PS F462 **Alaska Government and Politics** (s)
3 Credits
Alaska's government and politics, in the context of American state and local government, and politics and governments of circumpolar northern nations. Topics include political history, constitution, political parties, interest groups, elections, public opinion, governor, legislature, judiciary, administration and local governments. Compares Alaska to the contiguous 48 states and subnational governments of the circumpolar North; examines how government institutions and processes respond to social, environmental and political changes of Northern communities. ***Prerequisites: Upper-division standing or permission of instructor.*** Stacked-with: NORS F662; PS F662. (3+0)

PS F464 W **East Asian Governments and Politics** (s)
3 Credits Offered Fall Even-numbered Years
Modern East Asia (including China, Taiwan, Japan, North and South Korea) politics and society, including governmental institutions, political processes and regional and global foreign relations. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; PS F201; or permission of instructor.*** (3+0)

PS F467 W **Political Development in Latin America and the Caribbean** (s)
3 Credits Offered Fall Odd-numbered Years
Exploration of major issues and concepts in the development and governances of modern Latin America and the Caribbean region, including the legacies of colonialism, revolution, military rule, economic challenges and the quest for democratic stability. Includes a historical overview of the region and cases drawn from the Caribbean, Mexico, Central and South America. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; PS F201 or HIST F102; or permission of instructor. Recommended: SPAN F221.*** Cross-listed with HIST F467. (3+0)

PS F468 W **Government and Politics of Russia** (s)
3 Credits Offered Spring Even-numbered Years
Current developments in Russia from a number of perspectives. The effect of history and geography on political change; the nature of Russian government and society; the legacies of Lenin, Stalin, Gorbachev and the ideological nature of regimes and leadership. Economic forces and the political struggle in governance; revolution, democracy and reform; and the international role of Russia, particularly in relation to the former Soviet republics, Eastern Europe and other border areas. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; PS F201; or permission of instructor.*** Stacked with NORS F668; PS F668. (3+0)

PS F472 **Ethics in International Affairs** (h)
3 Credits Offered Spring Odd-numbered Years
Examination of questions including: What is in the interest of the nation-state according to the logic of statecraft? How does the national interest relate to the broader human interest? How does morality relate to the international legal order? Examination is through theory and case studies. ***Prerequisites: PHIL F322X or equivalent or PS F321; or permission of instructor.*** Cross-listed with PHIL F472. (3+0)

PS F475 **Internship in Public Affairs**
3 Credits
Individual study of public agencies or organizations through actual experience. ***Prerequisites: Permission of instructor.*** (3+0)

PS F499 W **Senior Thesis**
3 Credits
Thesis will draw from the literature in at least two sub-fields of political science (U.S. government/politics, political theory, public law, comparative politics, international relations) in its analysis. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; PS F101; PS F222; senior standing; permission of instructor.*** (1.5+0+7.5)

PS F603 **Public Policy**
3 Credits Offered Spring Even-numbered Years
The processes of policy development, implementation, and change are analyzed along with major policy frameworks and models used in contemporary political science. These frameworks and models will be applied to environmental sustainability and other social policy issues. Students will develop expertise in a specific policy area and skills in research design preparing them to analyze public policy. ***Prerequisites: Graduate Standing.*** Cross-listed with NORS F603. Stacked with PS F403. (3+0)

PS F647 **U.S. Environmental Politics**
3 Credits
U.S. political institutions as they relate to making policies for protecting the quality of the natural environment. The politics of nuclear waste, endangered species, air and water pollution, and wilderness preservation. Analysis of the National Environmental Policy Act, sustainable development, limits to growth

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and other topics. Course is also available online. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with NORS F647. Stacked-with: PS F447. (3+0)

PS F650 **Comparative Indigenous Rights and Policies**
3 Credits Offered As Demand Warrants
Comparative approach to analyzing Indigenous rights and policies in different nation-state systems. Multiple countries and specific policy developments examined for factors promoting or limiting self-determination. ***Prerequisites: Graduate Standing.*** Stacked with PS F450; ANS F450. (3+0)

PS F654 **International Law and the Environment**
3 Credits Offered Fall Odd-numbered Years
International environmental law. Includes international case law regulating the sea, airspace, outer space and the polar regions; comprehensive international regulatory and legal instruments to protect the environment (e.g., the U.N. Framework Convention on Climate Change); and the doctrines, principles, and rules of international law that are basic to an understanding of international legal regimes and the environment. Course is also available online. ***Prerequisites: Graduate standing or permission of instructor. Recommended: Undergraduate course in international law, organization, or politics.*** Cross-listed with NORS F654. Stacked with PS F454. (3+0)

PS F655 **Political Economy of the Global Environment**
3 Credits Offered Fall Odd-numbered Years
Interactions between basic aspects of the global economy (international trade, investment and development) and the natural environment. Topics include the economic impact of global environmental agreements and the environmental impact of global markets, transnational corporations, and development assistance by organizations such as the World Bank. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with NORS F655. Stacked with PS F455. (3+0)

PS F656 **Science, Technology, and Politics**
3 Credits
Relationship of science, technology and politics. Connections among scientific knowledge, technology, technological innovations, politics and power. Both historical and comparative aspects are included. Course is also available online. ***Prerequisites: Graduate standing or permission instructor. Recommended: PS F101.*** Cross-listed with NORS F656. Stacked with PS F456. (3+0)

PS F658 **Comparative Environmental Politics**
3 Credits Offered Fall Odd-numbered Years
Enduring issues of the field of comparative politics and their relation to global environmental problems. Biodiversity, transboundary pollution and climate warming. Explores how state-society relations, political institutions, national political capacity, political processes and organizations, and international commitments potentially shape the nature and dynamics of global environmental politics and vice versa. Course is also available online. ***Prerequisites: Graduate standing or permission of instructor. Recommended: PS F201 or equivalent comparative politics course.*** Cross-listed with NORS F658. Stacked with PS F458. (3+0)

PS F660 **Government and Politics of Canada**
3 Credits Offered Spring Odd-numbered Years
The Canadian political system, covering the Canadian constitution, federal structure, parliamentary government and public policy, as well as contemporary issues concerning Native rights and the Canadian North. Students will complete a major research paper on specific policy areas (language, education, health care, environment, natural resources, foreign relations). ***Prerequisites: PS F201; graduate standing; or permission of instructor.*** Cross-listed with NORS F660. Stacked with PS F460. (3+0)

PS F662 **Alaska Government and Politics**
3 Credits Offered Spring Odd-numbered Years
Alaska's government and politics, in the context of American state and local government, and politics and governments of circumpolar northern nations. Topics include political history, constitution, political parties, interest groups, elections, public opinion, governor, legislature, judiciary, administration and local governments. Compares Alaska to the contiguous 48 states and subnational governments of the circumpolar North; examines how government institutions and processes respond to social, environmental and political changes of Northern communities. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with NORS F662. Stacked-with: PS F462. (3+0)

PS F668 **Government and Politics of Russia**
3 Credits
Current developments in Russia from a number of perspectives. The effect of history and geography on political change; the nature of Russian government and society; the legacies of Lenin, Stalin, Gorbachev, and the ideological nature of regimes and leadership. Economic forces and the political struggle in governance; revolution, democracy and reform; and the international role of Russia, particularly in relation to the former Soviet republics, Eastern Europe and other border areas. ***Prerequisites: PS F201; graduate standing; or permission of instructor.*** Cross-listed with NORS F668. Stacked with PS F468. (3+0)

POWER GENERATION

PGEN F101 **Introduction to Power Generation, Distribution and Alternative Energy**
3 Credits
Designed for those interested in gaining knowledge of the modern methods of commercial power generation and its distribution. Provides an overview of current trends toward the development of stable, sustainable, alternative energy, production method(s) and terminology/concepts relative to modern industrial power generation. ***Recommended: ENGL F111X; any 100-level MATH.*** (3+0)

PGEN F102 **Basic Electricity for Power Generation Operators**
4 Credits
Introduction to basic electrical theory and to hands-on training for basic electricity. Introduction to basic electrical equipment, systems, and instrumentation utilized in the production and control of commercial electrical power generation. ***Recommended: ENGL F111X; any F100-level MATH.*** (3+2)

PGEN F103 **Introduction to Power Generation: Maintenance**
4 Credits
Designed for those interested in advancing their knowledge of maintenance relative to the commercial power industry. Provides overview of power generation equipment and the routine maintenance required to keep the equipment. Also provides an overview of safe working practices, tools, procedures, drawings, Piping and Instrumentation (P&ID's) and Process Safety Management (PSM). ***Prerequisites: PGEN F101; PGEN F102; or permission of instructor. Recommended: Computation course.*** (3+2)

PGEN F104 **Gas and Steam Turbines: Cogeneration and Combined Cycle Technologies**
4 Credits
Introduces basic information associated with modern gas and steam turbines, and the systems in which they are used to produce electrical power and/or steam for heating. ***Prerequisites: PGEN F101; PGEN F102; PGEN F103; or permission of instructor. Recommended: Computation course.*** (4+0)

PROCESS TECHNOLOGY

PRT F101 **Introduction to Process Technology**
3 Credits
Introduction to process operations in industry. Non-mathematical overview of general information, processes, procedures and equipment a process operator would be expected to know and use. (3+0)

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PRT F110 **Introduction to Occupational Safety, Health and Environmental Awareness**
3 Credits
Overview of the field of safety, health and environment within the process industry. Covers plant hazards, safety, and environmental systems and equipment, and applicable government regulations and industry standards. (3+0)

PRT F117 **Drafting for Technicians**
3 Credits Offered As Demand Warrants
Skills and techniques needed to produce process piping and instrumentation drawings. Special fees apply. (2+2)

PRT F120 **Water Quality Management for Process Industries**
4 Credits Offered As Demand Warrants
Overview of the chemistry, biology, hydraulics and hydrology related to water management in industries. Water distribution systems, water processing, operation of water works, wastewater processing, advanced wastewater treatment and water reuse. (3+3)

PRT F130 **Process Technology I: Equipment**
4 Credits
Selected process equipment including rotating machinery and process units. Emphasis on equipment components, construction, preventative maintenance and safety. Includes hands-on experience. ***Prerequisites: PRT F101.*** (3+2)

PRT F135 **Stationary Equipment**
4 Credits Offered Fall
A detailed hands-on lecture/lab course covering stationary equipment used in a variety of process industries. Piping, valves, vessels, tanks, exchangers, heaters, boilers, mineral processing, mill equipment and distillation equipment are covered. (3+2)

PRT F140 **Industrial Process Instrumentation I**
3 Credits
Physics of pressure, temperature, level and flow measurement; mechanical and electrical aspects of instruments used to control dynamics of processes. Dynamics of automatic control including proportional control, automatic reset, derivative action and integral timing. ***Prerequisites: DEVM F105 or permission of instructor.*** (2+2)

PRT F144 **Industrial Process Instrumentation II**
3 Credits
Continuation of PRT F140. Emphasis on repair, maintenance and calibration, including hands-on physical training on a wide variety of process instruments. ***Prerequisites: PRT F140.*** (2+2)

PRT F160 **Oil and Gas Exploration and Production I**
3 Credits
Surveys oil and gas exploration and production issues including marketing, geology, reservoir economics, legal aspects of resource ownership, drilling and production technologies, product separation, safety and environmental issues. Course may not be audited. ***Prerequisites: Must be enrolled in the PRT program or permission of Program Chair.*** (3+0)

PRT F230 **Process Technology II: Systems**
4 Credits
Integration of equipment concepts to show how the individual components interact as part of a system and how each system works within an entire processing facility. Emphasis on the common systems found in each Alaska process industry. Systems topics include upstream oil and gas productions, petrochemicals and refinery processes, refrigeration, power generation, milling, boilers and heaters, coolers and heat exchangers. ***Prerequisites: PRT F130.*** (3+2)

PRT F231 **Process Technology III: Operations**
4 Credits
Duties and responsibilities of the process operator on the job. Includes the details of normal operation, upset conditions, emergency action plans, startups, shutdowns, operating modes, turnarounds and routing maintenance activity. ***Prerequisites: PRT F230.*** (3+2)

PRT F240 **Industrial Process Instrumentation III**
3 Credits Offered As Demand Warrants
A study of digital and analog industrial measurement and control instrumentation, including continuous analog control loops, relay logic and programmable logic controllers. Emphasis is on commonly used process measurement devices, control methods and strategies, and the proper selection, identification, design, installation and operation of instrumentation. ***Prerequisites: PRT F140; PRT F144; or permission of instructor. Recommended: PRT F155 or MATH F103X or higher.*** (2+2)

PRT F248 **Valve Maintenance and Instrumentation**
3 Credits Offered As Demand Warrants
Specific advanced subjects of industrial process valve maintenance and instrumentation. Includes calibration, configuration, troubleshooting, and use of valves with instrumentation. Concepts of contemporary plant control systems, commonly used industrial process measurement, control communication protocols and topologies related to valve control will be discussed. Covers maintenance and operation of gate, globe, ball, plug, check and special-purpose valves. Details of actuators and various accessories related to valve maintenance and control will be explained and related to valve selection based on application. ***Recommended: PRT F130.*** (3+1)

PRT F250 **Process Troubleshooting**
3 Credits
Troubleshooting process operations and problems. Using indicators, variables and controllers along with a formalized process of troubleshooting. Troubleshooting examples will reflect current needs of industry. ***Prerequisites: PRT F231.*** (3+0)

PRT F255 **Quality Concepts for the Process Industry**
1 Credit
Introduction to current quality concepts applied to role of process technician. Includes quality concepts with respect to the client and the role of statistical processes used by the operator in achieving quality. (1+0)

PRT F275 **Process Technology Internship**
1-9 Credits Offered As Demand Warrants
Working experience in and exposure to various stages and settings within the process industry. Endorsed and promoted by Alaska Process Industry Careers Consortium, the internship is an intensive exposure to the various duties and responsibilities of the process operator in Alaska. A maximum of 9 credits may be earned. ***Prerequisites: Permission of instructor. Recommended: PRT F101, PRT F110, PRT F140.*** (0+5-45)

PSYCHOLOGY

PSY F101 **Introduction to Psychology** (s)
3 Credits
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. (3+0)

PSY F240 **Lifespan Developmental Psychology** (s)
3 Credits
The psychology of human development from conception to death. Critical emphasis on theory and research within the field of developmental psychology with attention paid to similarities and differences in development across cultures. Topics include the psychological ramifications of physical development

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along with cognitive, personality, and social development across the lifespan. Also available via Independent Learning. ***Prerequisites: PSY F101.*** (3+0)

PSY F245 **Child Development**
3 Credits
Physical, cultural, emotional, cognitive and social aspects of a child's development from the prenatal period through early adolescence. Focus on developmental theories including Erickson, Gardner, Gilligan, Kagen, Sternberg, Vygotsky and other contemporary theories of child and adolescent development. ***Prerequisites: PSY F101 or permission of instructor.*** Cross-listed with ED F245. (3+0)

PSY F250 **Introductory Statistics for Behavioral Sciences**
3 Credits Offered Spring
Statistics applied to social scientific topics. Includes 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. Also available via Independent Learning. ***Prerequisites: MATH F103X or MATH F107X or MATH F200X.*** Cross-listed with SOC F250. (3+0)

PSY F275 **Introduction to Social Science Research Methods** (s)
3 Credits Offered Spring
Introduction to research methods in psychology. Includes the scientific process, developing research ideas, experimental and non-experimental designs, sampling, surveys and data analysis. ***Prerequisites: PSY F101.*** (3+0)

PSY F304 **Personality** (s)
3 Credits Offered Fall
Psychological and social/cultural determinants of personality formation including appropriate theories in both areas. ***Prerequisites: PSY F101.*** (3+0)

PSY F310 O **Cross-Cultural Psychology** (s)
3 Credits Offered Spring
Major theories and research related to understanding the impact of culture on psychological development, cognition, social behavior, perception, and models for the conceptualization of distress and disease. Models for research and inquiry across culture will be discussed in the context of examining cross-cultural research on selected topics. ***Note: Meets departmental community service requirement for Psychology major. Prerequisites: COMM F131X or COMM F141X; PSY F101; PSY F240.*** (3+0)

PSY F320 **History and Systems of Psychology** (s)
3 Credits Offered As Demand Warrants
The history of present psychology from associationism to humanism with attention to both the philosophical and physiological foundations of psychology, the most important theorists and movements, and paradigmatic shifts in the evolution of contemporary psychological systems. ***Prerequisites: PSY F101.*** (3+0)

PSY F330 **Social Psychology** (s)
3 Credits Offered Spring
Analysis of intergroup 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. ***Prerequisites: PSY F101 or SOC F100X.*** Cross-listed with SOC F330. (3+0)

PSY F333 **Human Sexualities Across Cultures** (s)
3 Credits Offered Fall Odd-numbered Years
Exploration of how people in a variety of cultures, both contemporary and historical, construct the meaning and experience of sexuality, and express themselves as sexual beings. Interdisciplinary study includes psychology, sociology, anthropology, gender studies, and related fields, with particular focus determined by which department is offering the course. Also available via Independent Learning. ***Prerequisites: SOC F100X; or SOC F201 or PSY F101 or WGS F201; or permission of instructor.*** Cross-listed with SOC F333; WGS F332. (3+0)

PSY F335 **Physiological Psychology**
3 Credits Offered Fall
Study of the biological bases of human behavior. Emphasis on functional anatomy of the nervous system to understand normal behavior and behavioral disorders in terms of their psychology, development, evolution and function. Also available via Independent Learning. ***Prerequisites: PSY F101. Recommended: BIOL F115X and BIOL F116X; or BIOL F111X and F112X.*** (3+0)

PSY F337 W **Sport Psychology**
3 Credits Offered As Demand Warrants
Theoretical and practical applications of psychological issues related to participation in physical activities, including exercise adherence, performance enhancement, group dynamics, leadership and coaching behaviors, arousal/anxiety, intervention strategies and lifespan participation. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; PSY F101; or permission or instructor.*** (3+0)

PSY F345 **Abnormal Psychology** (s)
3 Credits Offered Fall
A study of abnormal behavior, its causes, treatment and social impact. The major classifications of disorders are presented. ***Note: Meets department community service requirement for Psychology major. Prerequisites: PSY F101.*** (3+0)

PSY F350 **Comparative Psychology**
3 Credits Offered Spring Even-numbered Years
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 F101; BIOL F115X and BIOL F116X; or permission of instructor.*** (3+0)

PSY F360 O **Psychology of Women Across Cultures** (s)
3 Credits Offered Spring Odd-numbered Years
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. ***Prerequisites: COMM F131X or COMM F141X; PSY F101; or permission of instructor.*** (3+0)

PSY F370 **Drugs and Drug Dependence** (s)
3 Credits Offered Fall Even-numbered Years
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. ***Prerequisites: PSY F101 or permission of instructor.*** (3+0)

PSY F380 **Environmental Psychology** (s)
3 Credits Offered As Demand Warrants
Human behavioral responses to the physical environment, such as stress, darkness and isolation. Didactic methods include empirical methods related to behavioral research. ***Prerequisites: PSY F101. Recommended: PSY F335.*** (3+0)

PSY F390 W,O **Industrial and Organizational Psychology** (s)
3 Credits Offered As Demand Warrants
Application of psychological principles, theories and methods to issues related to work processes and work organizations. Includes employee selection, motivation, performance appraisal, decision-making, group dynamics, power and leadership, job design, and organizational change and development. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; PSY F101; PSY F250 or equivalent; PSY F275 or equivalent.*** (3+0)

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PSY F440 **Learning and Cognition** (s)
3 Credits Offered Spring Odd-numbered Years
Theory and research on the fundamentals of learning. Topics include information processing, attention and consciousness, learning processes, memory structures, retrieval, and the biological and cultural considerations relevant to each. Also available via Independent Learning. ***Prerequisites: PSY F101; PSY F275.*** (3+0)

PSY F445 W **Community Psychology** (s)
3 Credits Offered Fall
Survey of principles and applications of community psychology, emphasizing person-environment interactions and societal and cultural impacts upon individual and community functioning. Attention given to interventions which facilitate psychological competence and empowerment, prevent disorder, and promote social change. Experiential learning emphasized through community service requirement. ***Note: Meets departmental community service requirement for Psychology major. Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; PSY F101; PSY F275.*** (3+0)

PSY F455 **Clinical Psychology**
3 Credits Offered As Demand Warrants
Survey of clinical psychology methods and approaches with consideration of psychological assessment and treatment. Topics include specific counseling strategies, such as psychoanalysis, behavior therapy, crisis intervention, rational-emotive and humanistic approaches, along with ethics in clinical practice and issues in cross-cultural counseling and psychological assessment and treatment. A clinical lab will allow students to apply their classroom learning and acquire hands-on experience in clinical skills. ***Prerequisites: PSY F240; PSY F275; PSY F345.*** (2+3)

PSY F469 **Health Psychology**
3 Credits Offered Fall
Scientific study of behaviors that relate to health enhancement, disease and injury prevention, safety and rehabilitation. While mental health is included, the emphasis is on physical health. Also available via Independent Learning. ***Prerequisites: PSY F101; PSY F275; and junior standing.*** (3+0)

PSY F470 **Sensation and Perception**
3 Credits Offered Spring Even-numbered Years
An integrated psychological and physiological approach to sensation, including the fundamental mechanisms of vision, hearing, taste, smell and movement. Emphasis will include theoretical models and systems of perception, and how they are influenced by cultural, developmental, hereditary, physiological psychological and social factors. ***Note: Meets departmental community service requirement for Psychology major. Prerequisites: PSY F101 and PSY F275.*** (3+0)

PSY F475 W **Research Design and Analysis in Psychology** (s)
3 Credits Offered Fall Even-numbered Years
An integrated approach to the study of research design and analysis in psychology. Emphasis on research methodologies and techniques. Design, execution and analysis of social science research. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; PSY F101; PSY/SOC F250 or STAT F200X; PSY F275; permission of instructor.*** (2+3)

PSY F480 W **Qualitative Social Science Research** (s)
3 Credits Offered Spring Odd-numbered Years
Introduction to classical and contemporary research within the qualitative (or interpretive) paradigm of social science. Discusses the theoretical frameworks, historical traditions, epistemological and ethical issues of qualitative approaches. Uses hands-on experience in the practicalities and excitement of a variety of methods for gathering qualitative data and conducting qualitative analyses. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; one lower-division social science research methods course; or permission of instructor.*** Cross-listed with SOC F480. (3+0)

PSY F485 **Senior Seminar** (s)
3 Credits Offered Spring
Synthesis and integration of knowledge and skills developed by psychology majors. Includes a general knowledge of psychology, a basic knowledge of the research process and methods, insights into the way culture, gender, ethnicity, social class, and other diversity issues influence research and practice in psychology. ***Prerequisites: PSY F275; Psychology major with senior standing.*** (3+0)

PSY F488 **Practicum in Psychology**
1-6 Credits
Individual practice and training to work in a setting or experience the work of a psychologist. Faculty supervision on campus or on site. Requires 50 clock hours per credit hour. Placement must be arranged before registering for course. Graded Pass/Fail. ***Prerequisites: Permission of instructor.*** (1+0)

PSY F601 **Clinical/Community/Cross-Cultural Integration Seminar**
1 Credit
Introduces current trends in community, clinical and indigenous psychology. Students are encouraged to explore how these three fields complement each other to bring about positive change in community and clinical settings. Special emphasis on ways to conceptualize mental health and community issues in culturally appropriate ways. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. Graded Pass/Fail. ***Prerequisites: Graduate standing in Psychology or permission of instructor.*** (1+0)

PSY F602 **Native Ways of Knowing**
3 Credits Offered Fall
Covers the appropriate and valid ways of describing and explaining human behavior by using the social context, culture and history of indigenous groups. Includes indigenous approaches to values, health, the interconnection of family and community; the nature of spirituality and indigenous healing; and the importance of elders and spiritual healers. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: Admittance to the Psychology Ph.D. program or permission of instructor.*** (3+0)

PSY F603 **Alaska and Rural Psychology**
3 Credits Offered Spring
Introduces rural community psychology, including the diversity of rural communities, with emphasis on Alaska and the rural circumpolar North. Provides an introduction to rural health promotion, prevention and behavioral health care, and a basis for understanding many of the issues of services planning and delivery in rural areas. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: PSY F632; graduate standing in Psychology; or permission of instructor.*** (3+0)

PSY F604 **Biological and Pharmacological Bases of Behavior**
3 Credits Offered Fall
Biological underpinnings of behavior and the basic principles of pharmacology. Deals with physiological causes and contributors to psychopathology and the medical sequelae of psychiatric disorders. Topics will include issues such as differential diagnosis, referral for medical or psychiatric evaluation and the functional and structural characteristics of relevant physiological systems. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: PSY F622; graduate standing in Psychology; or permission of instructor.*** (3+0)

PSY F605 **History and Systems of Psychology**
1 Credit Offered Fall
A brief philosophically oriented overview of the history of psychology. Compares Western psychology in the 19th and 20th centuries and selected indigenous psychologies of Asia and North America. Special attention is given to systems of thought that have emerged since the founding of psychology as an empirical science. Course will be video-conferenced between UAA and

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UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: Graduate standing in Psychology or permission of instructor.*** (1+0)

PSY F606 Native Ways of Healing
3 Credits
Explores healing from a variety of Native perspectives, particularly from an Alaska Native perspective. Emphasizes the preparation and education of healers, their roles and work and integration within the community. Students will have the opportunity to examine the possible integration of clinical and community psychology with indigenous approaches to healing. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: Graduate standing in Psychology or permission of instructor.*** (3+0)

PSY F607 Cognition, Affect and Culture
3 Credits Offered Spring
Presents an overview of attention, memory, appraisal and emotion with applications to clinical psychology in a cultural context. Cultural influences on emotional experience and cognition are explored. The etiology and treatment of psychological disorders with significant cognitive and affective disturbance are explored. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: Graduate standing in Psychology or permission of instructor.*** (3+0)

PSY F610 Alcohol: Pharmacology and Behavior
3 Credits Offered As Demand Warrants
A multidisciplinary approach to the study of alcohol abuse and alcoholism which incorporates the biomedical, epidemiological, genetic, pharmacological, psychological, social and cultural bases. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

PSY F611 Ethics and Professional Practice
3 Credits Offered Spring
Comprehensive overview of ethical principles and legal statutes involved in clinical and community practice and research. Designed as a forum for discussion of ethical issues and other concerns relevant to professionals in psychology, with particular emphasis given to ethical issues in cross cultural and rural contexts in Alaska. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: Admittance to the Psychology Ph.D. program or permission of instructor.*** (3+0)

PSY F612 Human Development in a Cultural Context
3 Credits Offered Spring
Study of development theory, research and substantive applied issues across the life span. Particular emphasis on understanding how culture and sociocultural context impact the interplay of biology and environment in development of essential qualities and characteristics of individuals. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: Graduate standing in Psychology or permission of instructor.*** (3+0)

PSY F614 Human Adaptation to the Circumpolar North
3 Credits Offered As Demand Warrants
Patterns of individual and family adaptation to the stresses and opportunities of northern regions. Focuses on successful and unsuccessful responses to northern conditions — the arctic climate, the northern economy, cultural diversity, and the professional opportunities and stress factors of sparsely populated frontier settings. Students will complete an original research paper. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

PSY F616 Program Evaluation and Community Consultation I
3 Credits Offered Fall
The first in a two-course series, providing an overview of theories, methods and applications of program evaluation and community consultation as tools for facilitating systemic and programmatic changes in community and clinical settings. Seminar covers techniques of entry into various settings and designing program evaluations in collaboration with various community organizations. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: PSY F639; graduate standing in Psychology; or permission of instructor.*** (3+0)

PSY F617 Program Evaluation and Community Consultation II
3 Credits Offered Spring
The second in a two-course series, introducing the principles and dynamics involved in various types of consultative relationships in community and clinical settings, with a focus on cross-cultural and ethical issues. Covers methods of program evaluation implementation and use of program evaluation findings for consulting with relevant stakeholders. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: PSY F616; graduate standing in Psychology or permission of instructor.*** (3+0)

PSY F618 Community Treatment Alternatives
3 Credits Offered As Demand Warrants
Examination of the role of community in the treatment of mental health problems among indigenous or ethnic groups. Focus on bringing the resources of the community to bear on the healing process. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

PSY F620 Treatment of Drug and Alcohol Dependency
3 Credits Offered As Demand Warrants
Examination of the treatments available for drug and alcohol abuse. Medical and psychological treatments will be studied. Medical treatments include abrupt, gradual and substituting techniques. Psychological techniques include traditional Western therapies as well as less traditional approaches. ***Prerequisites: PSY F610 or PSY F615; graduate standing or permission of instructor.*** (3+0)

PSY F622 Multicultural Psychopathology
3 Credits Offered Fall
An overview of contemporary views on child and adult psychopathology from a multicultural perspective. The fundamentals of clinical interviewing and diagnostics. Includes training in the DSM-IV diagnostic system. The role of culture, ethnicity, gender and social class in symptom formation and the experience of psychological disorders will be examined. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: Graduate standing in Psychology or permission of instructor.*** (3+0)

PSY F623 Intervention I
3 Credits Offered Fall
Increases knowledge and skills related to traditional and nontraditional therapeutic interventions. Students are provided with a range of theoretical perspectives, a conceptual understanding of and an opportunity to practice a wide range of culturally relevant and appropriate techniques that are applicable in traditional and non-traditional community mental health settings. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: Graduate standing in Psychology or permission of instructor.*** (3+0)

PSY F625 Prevention of Alcohol and Drug Dependency
3 Credits Offered As Demand Warrants
Study of the various ways to prevent alcohol dependency, especially among indigenous peoples or in ethnic groups. Emphasis on cross-cultural approaches to the prevention of dependency. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

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PSY F629 **Intervention II**
3 Credits Offered Spring
Deepens understanding of the variety and application of intervention techniques in diverse settings. Directs students to explore the efficacy of specific interventions in a range of settings and with a variety of populations. Shapes critical thinking and basic intervention evaluation skills. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: PSY F623; admittance to Psychology Ph.D. program or permission of instructor.*** (3+0)

PSY F630 **Community Psychology**
3 Credits Offered Fall
Current status of community psychology, focusing on person-environment interactions and societal and cultural impacts upon individual and community functioning. An advanced-level overview of theory, research and practice of community psychology with particular emphasis on cross-cultural themes. Students are expected to apply their learning in a community-based experience. Goal is to empower students to contribute to effective change in their communities. ***Prerequisites: Admittance to Community Psychology Program or permission of instructor.*** (3+0)

PSY F631 **Community Psychology: Cross-Cultural Applications and the Ethics of Change**
3 Credits Offered As Demand Warrants
Advanced study of the application of community psychology with an emphasis on the design and evaluation of interventions which facilitate psychological competence and empowerment, prevent disorder, and promote social change. Value-context of community psychology and the ethics of intervention are examined with particular emphasis on applications to cross-cultural settings and indigenous approaches to change. Students are expected to continue and broaden their community-based experience. ***Prerequisites: PSY F630 or permission of instructor.*** (3+0)

PSY F632 **Community Psychology Across Cultures**
3 Credits Offered Fall
An overview of theory, research and practice of community psychology with particular emphasis on cross-cultural themes, design and evaluation of interventions in remote and rural community settings, prevention and health promotion, and social change. Particular emphasis will be on issues relevant to Alaska Native communities. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: Graduate standing in Psychology or permission of instructor.*** (3+0)

PSY F633 **Tests and Measurement in Multi-Cultural Context**
3 Credits Offered Fall
Principles of construction, analysis and evaluation of psychological tests in a multicultural context. Emphasizes culturally sensitive application of psychological tests and measurements. Focuses on the history, theory and methods of psychological testing by examining intelligence, personality and vocation. Discusses widely-used intelligence and personality tests and procedures. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: Graduate standing in Psychology or permission of instructor.*** (3+0)

PSY F635 **Field-Based Research Methods**
3 Credits Offered Fall; As Demand Warrants
Methods used in doing cross-cultural research in community settings. Emphasis on formal descriptions of the interaction between people and their environments. The course will present a wide variety of designs, analyses and conceptual approaches appropriate to improving our general understanding of behavior in communities. Both quantitative and qualitative methods will be presented in the context of carrying out individual research projects. ***Prerequisites: Admittance to Community Psychology Program or permission of instructor.*** (3+0)

PSY F636 **Program Evaluation**
3 Credits Offered As Demand Warrants
Advanced introduction to theory, methods and techniques of program evaluation with specific relevance to conducting evaluations in Alaska. Papers, in-class exercises and discussions will cover all phases of program evaluation, including conceptualization, role of the evaluator, planning and implementing an evaluation, methodological and ethical issues, and analyzing and reporting results to stakeholders and participants. Emphasis on awareness of and sensitivity to potential cultural, class and gender differences in the evaluation process. ***Prerequisites: PSY F635 or comparable graduate level social science research methods course; admittance to Community Psychology Program; or permission of instructor.*** (3+0)

PSY F638 **Proseminar in Clinical, Community and Cultural Psychology**
1-3 Credits Offered As Demand Warrants
Topical seminar in an area of clinical, community and cultural psychology. Emphasis areas include rural Alaska, circumpolar, or indigenous psychology with one focus including integration across the sub-disciplines of clinical, community and cultural psychology. ***Prerequisites: Graduate standing; or permission of instructor.*** (1-3+0)

PSY F639 **Research Methods**
3 Credits Offered Spring
Methods used for research in community, clinical and cross-cultural settings. Introduces epistemologies and ethics relevant to research with rural and indigenous people. Includes a variety of designs and data-gathering methods to improve understanding of behavior in social settings. Quantitative, qualitative and mixed method approaches will be presented. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: Admittance to Psychology Ph.D. program or permission of instructor.*** (3+0)

PSY F644 **Advanced Multicultural Lifespan Development**
3 Credits
Advanced study of the cultural influences on human lifespan development with particular attention to the peoples and cultures of Alaska. Exploration of classical and contemporary research and theories. Emphasis on practical and professional applications. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

PSY F646 **School Counseling**
3 Credits Offered Fall
Topics related to the role of the school counselor such as consultation, career guidance, and culturally appropriate assessment. ***Prerequisites: Graduate standing or permission of instructor.*** Cross-listed with COUN F646. (3+3)

PSY F647 **Professional Ethics**
3 Credits Offered Fall
The ethical standards of the American Psychological Association and American Counseling Association will be examined, discussed and compared. Students will be provided with opportunities to apply these general principles to specific cases. Students will be expected to demonstrate a knowledge of the principles of these three ethical codes and an ability to apply them. Also available via Independent Learning. ***Prerequisites: Admittance to Master's program in Psychology or Counseling, or permission of instructor.*** Cross-listed with COUN F647. (3+0)

PSY F650 **Cross-Cultural Psychopathology**
3 Credits Offered Fall
An overview of contemporary perspectives on child and adult psychological disorders from the perspective of cultural psychology. Fundamentals of therapeutic interviewing. Training in use of the DSM-IV diagnostic system. Examination of the role of culture, ethnicity, gender, and social class in symptom formation and the experience of illness, and critical examination of these issues in clinical application of the DSM-IV. Training in DSM-IV cultural formulation. ***Prerequisites: PSY F345 or equivalent; admittance to Counseling program; or permission of instructor.*** Cross-listed with COUN F650. (3+0)

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PSY F652 **Practicum Placement — Clinical I**
1-3 Credits Offered Fall
Supervised clinical practicum experience in psychological interviewing, diagnosis and psychotherapy. Applied techniques focusing on delivery of clinical services in traditional or non-traditional clinical settings. Cultural factors are considered in each of these areas. May be repeated for a maximum of 9 credits. Special fees apply. ***Prerequisites: PSY F611; PSY F622; PSY F623; PSY F645; admittance to the Psychology Ph.D. program; or permission of instructor. May be repeated for a maximum of 9 credits.*** (1-3+0+7-20)

PSY F653 **Practicum Placement — Clinical II**
1-3 Credits Offered Spring
Advanced clinical practicum experience designed to provide increased depth in applying theory to the practice and improving skills as a clinician. Covers application of psychological assessment principles. Impact of cultural factors continues as a major aspect of the practicum experience. May be repeated for a maximum of 9 credits. ***Prerequisites: PSY F652; admittance to Psychology Ph.D. program; or permission of instructor.*** (1-3+0)

PSY F655 **Cross-Cultural Healing: Implications for Clinical/ Community Practice**
3 Credits Offered As Demand Warrants
A presentation of healing across a variety of cultures: Native American, Western, African, Polynesian and Oriental. The course will emphasize the preparation and education of healers, their roles and work, and integration within a community. Analyses and implications for the practice of preparation for community psychology roles will be stressed. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

PSY F657 **Quantitative Analysis**
3 Credits Offered Fall
The underlying principles of statistics, including the logic of statistical inference, probability, power, effect size, and type one and two errors. Uses statistics for designs including the description of groups (data reduction), correlation, predictive models (regression), inferential statistics, analysis of mixed- method designs, and common nonparametric techniques. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: PSY F639; admittance to Psychology Ph.D. program; or permission of instructor.*** (3+0)

PSY F658 **Qualitative Analysis**
3 Credits Offered Fall
Introduction to the theory of qualitative inquiry, qualitative methodologies and basic techniques of qualitative research. Enables the student to use qualitative methods in research. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: PSY F639; graduate standing in Psychology; or permission of instructor.*** (3+0)

PSY F659 **Multivariate Statistics**
3 Credits
Provides a conceptual discussion of and statistical software training in advanced statistical analysis, including multivariate regression, canonical correlation, discriminant analysis, multivariate analysis of variance, principle component analysis, factor analysis, logistic regression, and cluster analysis. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: PSY F639; PSY F657; admittance to Psychology Ph.D. program; or permission of instructor.*** Cross-listed with COUN F623. (3+0)

PSY F660 **Counseling Theories and Applications I**
3 Credits Offered As Demand Warrants
A survey of the major theoretical systems of counseling and psychotherapy combined with a laboratory experience focused on building microskills in counseling. Specific application of theoretical principles will be investigated, analyzed and described. ***Prerequisites: Admittance to Counseling Program; or permission of instructor.*** Cross-listed with COUN F623. (3+2)

PSY F661 **Cross-Cultural Counseling**
3 Credits Offered Spring; As Demand Warrants
An examination of cultural and ethnic variables in human nature and their effect on the counseling process. Specific focus will be placed on the nature and function of culture, cultural variables in the context of the human experience, universal and culture-specific aspects of the counseling process, barriers to effective cross- cultural counseling, specific ethnic and cultural considerations, and methods of intellectual training with special emphasis on Alaskan applications. ***Prerequisites: Admittance to the Counseling program; or permission of instructor.*** Cross-listed with COUN F660. (3+0)

PSY F662 **Clinical Team/Practice**
3 Credits Offered As Demand Warrants
Increasing depth in applying theory to practice and improving skills as a therapist. Requires supervised clinical practice in psychotherapy with clients. Topics include ethics in counseling and psychotherapy practice, specific and non-specific factors in psychotherapy, goal setting and termination, managing transference and countertransference, treatment planning, and analysis and assessment of therapists understanding of therapeutic work and client progress. Cultural factors are considered in each of these issues. Supplement to PSY 660. ***Prerequisites: PSY F660; graduate standing in the Community Psychology program or permission of instructor.*** (3+0)

PSY F663 **Clinical Methods and Assessment**
3 Credits Offered As Demand Warrants
Fundamentals of therapeutic interviewing. Assessment of personality style and classification of psychopathology. Survey and practice with psychological tests. ***Prerequisites: Graduate standing in the Community Psychology program or permission of instructor.*** (3+0)

PSY F664 **Behavior Therapy**
3 Credits Offered As Demand Warrants
Behavior therapy and its associated techniques. The philosophical and scientific basis for behavior and therapy are studied, as well as specified procedures such as systematic desensitization, assertive training, behavior modification and others. Includes practice of techniques to gain facility with the skills involved. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

PSY F665 **Psychoanalytic Theory and Clinical Method**
3 Credits Offered As Demand Warrants
Psychoanalytic theory and the study of lives are presented to acquaint the student with the analysis of life histories or psychoanalytic perspective. Study of the therapeutic procedures of Freud, Jung, Searles, Sullivan, Lacan and object relations theorists. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

PSY F666 **Family and Network Therapy**
3 Credits Offered Spring
Survey of concepts and theories of function and dysfunction in the area of couples and families as social networks. Introduction to the skills necessary for intervention in these systems. ***Prerequisites: COUN F623; admittance to the Counseling program; or permission of instructor.*** Cross-listed with COUN F666. (3+0)

PSY F667 **Existential Psychotherapy**
3 Credits Offered As Demand Warrants
Focus on ultimate concerns rooted in the individual's existence. Theoretical and therapeutic approaches to existential issues such as death, freedom, isolation/relationship, meaning/meaninglessness and suffering. Euro-American, Native American and Eastern concepts and practices are examined. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

PSY F669 **Health Psychology**
3 Credits Offered Fall
Scientific study of behaviors relating to health enhancement, disease and injury prevention, safety and rehabilitation. While mental health is included, the emphasis is on physical health. ***Prerequisites: Graduate standing or permission of instructor.*** Stacked with PSY F469. (3+0)

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PSY F671 Grant Writing
3 Credits
Provides hands-on training in developing, writing and submitting grant proposals. Discusses components of the grant writing process with an emphasis on grant writing for nonprofits and public agencies. Emphasizes research grant writing, with a focus on NIH grant application and review processes and secondary attention to NSF process. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: PSY F639; graduate standing in Psychology or permission of instructor.*** (3+0)

PSY F672 Practicum Placement — Community I
3 Credits Offered Fall
Community practicum experience designed to provide increased depth in applying theory to practice and improving skills as a community psychologist. Impact of cultural factors will be a major aspect of the practicum experience. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. Students will also be under close supervision with a community organization. May be repeated for a maximum of 9 credits. Special fees apply. ***Prerequisites: Graduate standing in Psychology or permission of instructor.*** (3+0)

PSY F673 Practicum Placement — Community II
3 Credits Offered Spring
An advanced community practicum experience designed to provide increased depth in applying theory to practice and improving skills as a community psychologist. Impact of cultural factors will be a major aspect of the practicum experience. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. Students will also be under close supervision with a community organization. Second phase of PSY F672. ***Prerequisites: PSY F672; graduate standing in Psychology; or permission of instructor.*** (3+0)

PSY F674 Group Counseling
3 Credits Offered Spring, Alternate Summer
Kinds and types of groups with emphasis on methods, problems and skills needed in working with groups in a counseling situation. ***Prerequisites: COUN F623/PSY F660; admittance to the Counseling program; or permission of instructor.*** Cross-listed with COUN F674. (3+0)

PSY F677 Psychological Assessment-Intelligence
3 Credits Offered As Demand Warrants
Methods of psychological assessment concerning intelligence. Survey of the concept of intelligence and its many multicultural implications. Widely used intelligence assessment procedures will be examined with particular concern for minority issues and the concept of intelligence. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

PSY F678 Multicultural Psychological Assessment
3 Credits Offered As Demand Warrants
Introduction to administration, scoring and interpretation of selected intelligence and personality instruments for children and adults. Integration of test findings and report writing will be reviewed. Basic psychometric theory and test validity will be explored. A particular focus is multicultural assessment practice, with emphasis upon practice with Alaska Native people ***Prerequisites: Graduate standing in the Community Psychology Program or permission of instructor.*** (3+0)

PSY F679 Multicultural Psychological Assessment I
3 Credits Offered Spring
Introduces administration, scoring and interpretation of various intellectual and objective personality assessment instruments, as well as their psychometric properties, for children and adults. Emphasis on the meaningful integration of test results into a culturally sensitive assessment report. Highlights professional and ethical issues related to multicultural assessment practices emphasizing Alaska Natives. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: PSY F633; admittance to the Psychology Ph.D. program; or permission of instructor.*** (3+0)

PSY F681 Substances of Abuse in Alaska
1 Credit Offered Fall
Overview of the most prevalent substances of abuse in Alaska including physical, psychological, social and medical consequences of use and abuse. ***Prerequisites: Admittance into the Psychology Ph.D. program or permission of instructor. First in the sequence PSY F681, PSY F682, and PSY F683. For doctoral students in the program. In exceptional cases to students not in the doctoral program, but with appropriate background and training will be given special permission to take the course.*** (1+0)

PSY F682 Substance Abuse Assessment and Treatment Planning
1 Credit Offered Fall
Specialized tests, measurement and treatment planning for substance abuse. Emphasis on integrating results into culturally relevant treatment plans following the American Society for Addiction Medicine dimensional criteria. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: Admittance to Psychology Ph.D. program or permission of instructor. PSY F682 is the second in a continuing series that includes PSY F681 and PSY F683. For doctoral students in the program, it is to be taken as a series. In exceptional cases, students not in the doctoral program but with the appropriate background and training will be given special permission to take the course.*** (1+0)

PSY F683 Clinical Interventions in Substance Abuse
1 Credit Offered Fall
Conceptualizing substance abuse as a continuum from intervention to aftercare. Relevant evidence-based interventions and therapeutic communities are addressed within the context of rural Alaska Native communities. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. PSY F683 is the third in a continuing series that includes PSY F681 and PSY F682. For doctoral students in the program, it is to be taken as a series. In exceptional cases, students not in the doctoral program but with the appropriate background and training will be given special permission to take the course. ***Prerequisites: Admittance to the Psychology Ph.D. program or permission of instructor.*** (1+0)

PSY F684 Clinical Supervision
3 Credits
The clinical, ethical and cultural issues involved in supervision. Contemporary, empirically supported information regarding various approaches to supervision will be examined. Covers both the relationship inherent in clinical supervision and training in leadership and supervision of employees in other work settings. Course will be video-conferenced between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery. ***Prerequisites: PSY F639; admittance to Psychology Ph.D. program; or permission of instructor.*** (3+0)

PSY F686 Predoctoral Internship
6 Credits
Understanding and application of assessment and intervention techniques in diverse settings. Students are placed in clinical or community settings for 40 hours per week to apply and sharpen skills. Students work under a local supervisor who manages student caseloads and assignments in collaboration with the course instructor. Graded Pass/Fail. ***Approval contingent upon approval of Dissertation proposal and of DCT's (Directors of Clinical Training).*** (6+0)

PSY F687 Multicultural Psychological Assessment II
3 Credits
Advanced psychological assessment tools including interviews, projective techniques and neurocognitive assessment. Emphasis on the integration of cognitive personality and other test results derived from an assessment battery into a meaningful and culturally sensitive psychological assessment report. Course will be video-conference between UAA and UAF campuses. The course will make use of Blackboard and E-res to support distance delivery

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Prerequisites: PSY F679; admittance to Psychology Ph.D. program or permission of instructor. (3+0)

PSY F688 **Practicum in Community Psychology**
3 Credits Offered As Demand Warrants
Practicums provide for supervised experiences and weekly seminars with course instructor. The supervised experience will be at an agency that will provide direct and/or participant observation and interactions for the beginning counselor along with immediate feedback concerning the experience. The weekly seminars will cover actual and role-playing situations and skills appropriate to the specific practicum, i.e., alcohol or drug abuse, community, or clinical. ***Prerequisites: Graduate standing or permission of instructor.*** (2+7)

PSY F690 **Pre-Master's Internship in Community Psychology**
3-12 Credits Offered As Demand Warrants
Supervised practice experience in community and/or clinical psychology setting. Student spends 40 supervised clock hours for every credit. Internship may involve more than one site. Graded Pass/Fail. ***Prerequisites: Completed permission to enroll form and internship plan signed by program director.*** (0+40)

RECREATION

RECR courses are available to all UAF students who meet stated prerequisites. Students with disabilities are encouraged to participate. Any students requiring special accommodations are asked to contact the department office as soon as possible.

RECR F110-F170 courses include instruction, practice and activity in physical activities, sports and dance. Courses may be taken for credit once. Courses are graded Pass/Fail.

RECR F110A **Beginning Swimming**
1 Credit Offered As Demand Warrants
Beginning level swimming skills, proper breathing techniques and beginning strokes. Emphasizes personal water safety. Graded Pass/Fail. (0+3)

RECR F110B **Intermediate Swimming**
1 Credit Offered As Demand Warrants
Intermediate-level swimming skills, proper breathing techniques and beginning strokes. Emphasizes personal water safety. Graded Pass/Fail. (0+3)

RECR F110C **Advanced Swimming**
1 Credit Offered As Demand Warrants
Advanced-level swimming skills, proper breathing techniques and beginning strokes. Emphasizes personal water safety. Graded Pass/Fail. (0+3)

RECR F110D **Conditioning Swimming**
1 Credit Offered As Demand Warrants
Covers proper warm-up and warm-down techniques, lap swim etiquette, and proper use of workout equipment. Graded Pass/Fail. (0+3)

RECR F110E **Beginning Scuba**
1 Credit Offered As Demand Warrants
Instruction and practice in beginning underwater aquatic activities. Graded Pass/Fail. (0+3)

RECR F110F **Intermediate Scuba**
1 Credit Offered As Demand Warrants
Instruction and practice in intermediate underwater aquatic activities. Graded Pass/Fail. (0+3)

RECR F110G **Aqua Aerobics**
1 Credit Offered As Demand Warrants
Instruction and practice in aqua aerobics. Graded Pass/Fail. (0+3)

RECR F110H **Aquatic Activities and Instruction**
1 Credit Offered As Demand Warrants
Instruction and practice in aquatic activities at beginning through advanced levels including (but not limited to) swimming, conditioning, aqua aerobics, water polo, springboard diving and synchronized swimming. Graded Pass/Fail. (0+3)

RECR F110J **Fundamentals of Competitive Water Polo**
1 Credit Offered As Demand Warrants
Introduction to the game of water polo. Students will learn techniques used in water polo, as well as the basic rules and regulations of the sport. Graded Pass/Fail. Graded Pass/Fail. ***Prerequisites: RECR 110D or instructor permission.*** (0+3)

RECR F120A **Aerobics**
1 Credit Offered As Demand Warrants
Moderate to high impact dance routines set to music designed to increase cardiovascular strength, promote coordination, and increase overall body strength and flexibility. Graded Pass/Fail. (0+3)

RECR F120B **Low Impact Aerobics**
1 Credit Offered As Demand Warrants
Instruction and practice in low impact aerobics. Graded Pass/Fail. (0+3)

RECR F120C **Beginning Yoga**
1 Credit Offered As Demand Warrants
Beginning concepts and philosophy of yoga, breathing, postures, mediation, Sanskrit names of exercises, increased muscle tone and flexibility. Graded Pass/Fail. (0+3)

RECR F120D **Intermediate Yoga**
1 Credit Offered As Demand Warrants
Intermediate concepts and philosophy of yoga, breathing, postures, meditation, Sanskrit names of exercises, increased muscle tone and flexibility. Graded Pass/Fail. (0+3)

RECR F120E **Advanced Yoga**
1 Credit Offered As Demand Warrants
Advanced concepts and philosophy of yoga, breathing, postures, meditation, Sanskrit names of exercises, increased muscle tone and flexibility. Graded Pass/Fail. (0+3)

RECR F120F **Exercise And Fitness**
1 Credit Offered As Demand Warrants
Instruction and practice in activities at beginning through advanced levels including (but not limited to) multi-fitness conditioning, recreational fitness activities, running, cycling, walking, weight training, aerobics, power lifting, tai chi chuan and yoga. Graded Pass/Fail. (0+3)

RECR F120G **Military Fitness Training**
1 Credit Offered As Demand Warrants
Instruction and practice in fitness activities concentrating on flexibility, strength, and muscular and cardiovascular endurance. Graded Pass/Fail. (0+3)

RECR F120H **Multi Fitness Conditioning**
1 Credit Offered As Demand Warrants
An overview of medium to high intensity aerobic exercise and muscle strengthening, conditioning and toning. Graded Pass/Fail. (0+3)

RECR F120J **Weight Training**
1 Credit Offered As Demand Warrants
Design and perform strength training routines using resistance to achieve overall fitness. Graded Pass/Fail. (0+3)

RECR F120K **Advanced Weight Training**
1 Credit Offered As Demand Warrants
Design and perform strength training routines using resistance to achieve overall fitness. Graded Pass/Fail. (0+3)

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RECR F120L **Zumba Fitness**
1 Credit Offered As Demand Warrants
Introduction to basic Zumba Fitness/Latin dance steps from salsa, meringue, cumbia, reggaeton, and belly dance along with other international rhythms. Students will learn to identify the music, as well as a brief history of the dance. Graded Pass/Fail. Graded Pass/Fail. (0+3)

RECR F130A **Beginning Jazz Dance**
1 Credit Offered As Demand Warrants
Develop a repertoire of jazz dance movement and terminology including plies, isolations, stretches, traveling steps, battements, pas de burres, jazz slides and turns. History of jazz dance. Graded Pass/Fail. Cross-listed with THR F130A. (0+3)

RECR F130B **Intermediate Jazz Dance**
1 Credit Offered As Demand Warrants
Develop a repertoire of jazz dance movement and terminology including plies, isolations, stretches, traveling steps, battements, pas de burres, jazz slides and turns. History of jazz dance. Graded Pass/Fail. Cross-listed with THR F130B. (0+3)

RECR F130C **Advanced Jazz Dance**
1 Credit Offered As Demand Warrants
Develop a repertoire of a jazz dance movement and terminology including plies, isolations, stretches, traveling steps, battements, pas de burres, jazz slides and turns. History of jazz dance. Graded Pass/Fail. Cross-listed with THR F130C. (0+3)

RECR F130D **Modern Dance**
1 Credit Offered As Demand Warrants
Develop a repertoire of modern dance movement and terminology including contraction and release, swings, triplets, fall and recovery, rolls and improvisations. Graded Pass/Fail. Cross-listed with THR F130D. (0+3)

RECR F130E **Beginning Ballroom Dance**
1 Credit Offered As Demand Warrants
Students with little or no background in social dance. Our aim is to have a good time and build a strong foundation for future learning. Dances covered include waltz, foxtrot, single-count swing, east coast swing, salsa, cha cha, merengue and, time permitting, polka. Graded Pass/Fail. Cross-listed with THR F130E. (0+3)

RECR F130F **Intermediate Ballroom Dance**
1 Credit Offered As Demand Warrants
Dances covered include waltz, foxtrot, single-count swing, east coast swing, salsa, cha cha, merengue and, time permitting, polka. Our aim is to have a good time and build a strong foundation for future learning. This course is for students with a beginning background in social dance. Graded Pass/Fail. Cross-listed with THR F130F. (0+3)

RECR F130G **Advanced Ballroom Dance**
1 Credit Offered As Demand Warrants
Dances covered include waltz, foxtrot, single-count swing, east coast swing, salsa, cha cha, merengue and, time permitting, polka. Our aim is to have a good time and build an even stronger foundation for future learning. This course is for students with an intermediate background in social dance. Graded Pass/Fail. Cross-listed with THR F130G. (0+3)

RECR F130H **Beginning Ballet**
1 Credit Offered As Demand Warrants
Instruction and practice in ballet at beginning levels. Graded Pass/Fail. Cross-listed with THR F130H. (0+3)

RECR F130J **Intermediate Ballet**
1 Credit Offered As Demand Warrants
Instruction and practice in ballet at intermediate levels. Graded Pass/Fail. Cross-listed with THR F130J. (0+3)

RECR F130K **Advanced Ballet**
1 Credit Offered As Demand Warrants
Instruction and practice in ballet at advanced levels. Graded Pass/Fail. Cross-listed with THR F130K. (0+3)

RECR F130L **Square Dance**
1 Credit Offered As Demand Warrants
Instruction and practice in square dance. Graded Pass/Fail. Cross-listed with THR F130L. (0+3)

RECR F130M **Round Dance**
1 Credit Offered As Demand Warrants
Instruction and practice in round dances. Graded Pass/Fail. Cross-listed with THR F130M. (0+3)

RECR F130N **Middle Eastern Dance**
1 Credit Offered As Demand Warrants
Designed for students with some or no background in Middle Eastern dance or anyone who wants to refine their technique and gain a deeper understanding of the different styles, history and evolution of Middle Eastern dance from social dance to performance art. Majority of semester will focus on basic dance vocabulary and choreography as well as dancing with props such as veils and finger cymbals. Graded Pass/Fail. Cross-listed with THR F130N. (0+3)

RECR F130Q **Beginning Hip Hop**
1 Credit Offered As Demand Warrants
Introduction to basic movements and terminology of hip hop dances and associated body movements. Students will gain these principles and ability to execute maneuvers presented in class. Graded Pass/Fail. Cross-listed with THR F130Q. (0+3)

RECR F130R **Beginning Break Dance**
1 Credit Offered Fall
Introduction to basic movements and terminology of break dancing, and an understanding of associated body movements. Students will gain an understanding of these principles and an ability to execute maneuvers presented in class. Graded Pass/Fail. Cross-listed with THR F130R. Graded Pass/Fail. (0+3)

RECR F140A **Beginning Fencing**
1 Credit Offered As Demand Warrants
Beginning classical Italian style fencing, stresses form and bladework for both defense and offense. This style is difficult to learn, but when mastered is extremely effective. Graded Pass/Fail. Special fees apply. (0+3)

RECR F140B **Intermediate Fencing**
1 Credit Offered As Demand Warrants
Intermediate classical Italian style fencing, stresses form and bladework for both defense and offense. This style is difficult to learn, but when mastered is extremely effective. Graded Pass/Fail. Special fees apply. (0+3)

RECR F140C **Advanced Fencing**
1 Credit Offered As Demand Warrants
Advanced classical Italian style fencing, stresses form and bladework for both defense and offense. This style is difficult to learn, but when mastered is extremely effective. Graded Pass/Fail. Special fees apply. (0+3)

RECR F140D **EPCE Sabre Fencing**
1 Credit Offered As Demand Warrants
Instruction and practice activities in EPCE sabre fencing. Graded Pass/Fail. Special fees apply. (0+3)

RECR F140E **Beginning Pistol Marksmanship**
1 Credit Offered As Demand Warrants
Knowledge, skills and attitudes necessary for owning and using a pistol safely and to advance through the NRA marksmanship program. Pistol parts, operation, ammunition, gun safety, and shooting fundamentals. Safety will be the foremost concern. Graded Pass/Fail. Special fees apply. (0+3)

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RECR F140F Intermediate Pistol Marksmanship
1 Credit Offered As Demand Warrants
Intermediate knowledge, skills and attitudes necessary for owning and using a pistol safely and to advance through the NRA marksmanship program. Pistol parts and their operation, ammunition, gun safety, and shooting fundamentals. Safety will be the foremost concern. Graded Pass/Fail. (0+3)

RECR F140G Advanced Pistol Marksmanship
1 Credit Offered As Demand Warrants
Advanced knowledge, skills and attitudes necessary for owning and using a pistol safely and to advance through the NRA marksmanship program. Pistol parts and their operation, ammunition, gun safety, and shooting fundamentals. Safety will be the foremost concern. Graded Pass/Fail. Special fees apply. (0+3)

RECR F140H Beginning Rock Climbing
1 Credit Offered As Demand Warrants
Introduction to rock climbing, knots, risk evaluation, gear, rope skills, belaying, rappelling, jumaring, prusiking and top rope techniques. Graded Pass/Fail. Special fees apply. (0+3)

RECR F140J Intermediate Rock Climbing
1 Credit Offered As Demand Warrants
Intermediate rock climbing, knots, risk evaluation, gear, rope skills, belaying, rappelling, jumaring, prusiking and top rope techniques. Graded Pass/Fail. (0+3)

RECR F140K Advanced Rock Climbing
1 Credit Offered As Demand Warrants
An extension of beginning rock climbing. Hauling, aid climbing, advanced Jumar techniques, lead climbing, porta-ledge set up and taping. Graded Pass/Fail. Special fees apply. (0+3)

RECR F140L Technical Climbing
1 Credit Offered As Demand Warrants
Introduction to high-angle technical climbing, top-rope rock and ice skills, movement on rock and ice, rope work, anchor systems, climbing ethics. Graded Pass/Fail. Special fees apply. (0+3)

RECR F140M Intro to Fly Fishing and Fly Tying
1 Credit Offered As Demand Warrants
Stream, river, pond, and lake dynamics; fish anatomy, behavior, and life history; aquatic insects; and habitat and species of fish and insects; correlate limnology to fly selection and fishing strategy. Fall Fly Fishing: Interior Alaska limnology, entomology, and how they relate to fly-fishing. Fly-fishing as a medium to present college-level scientific concepts to students. Spring Fly Fishing: The art and science of fly casting, fishing and tying. Graded Pass/Fail. Special fees apply. (0+3)

RECR F140N Alaskan Fly Fishing and Tying
1 Credit Offered As Demand Warrants
The art and science of fly casting, fishing and tying. Graded Pass/Fail. Special fees apply. (0+3)

RECR F140O Advanced Fly Fishing and Fly Tying
1 Credit Offered As Demand Warrants
The art and science of advanced fly casting, fishing and tying. Graded Pass/Fail. (0+3)

RECR F140P Table Tennis
1 Credit Offered As Demand Warrants
Instruction and practice activities in table tennis. Graded Pass/Fail. (0+3)

RECR F140Q Tennis
1 Credit Offered As Demand Warrants
Instruction and practice activities in tennis. Graded Pass/Fail. (0+3)

RECR F140R Billiards
1 Credit Offered As Demand Warrants
Basic billiards skill set, strokes and using "English" on the cue ball. Focus on cutthroat, eight ball and nine ball using BCA rules. Graded Pass/Fail. (0+3)

RECR F140S Badminton
1 Credit Offered As Demand Warrants
Instruction and practice activities in badminton. Graded Pass/Fail. (0+3)

RECR F140T Beginning Golf
1 Credit Offered As Demand Warrants
Instruction and practice activities at beginning golf. Graded Pass/Fail. (0+3)

RECR F140U Intermediate Golf
1 Credit Offered As Demand Warrants
Instruction and practice activities in intermediate golf. Graded Pass/Fail. (0+3)

RECR F140V Bowling
1 Credit
Instruction and practice activities in bowling. Graded Pass/Fail. (0+3)

RECR F140W Advanced Golf
1 Credit Offered As Demand Warrants
Instruction and practice activities in advanced golf. Graded Pass/Fail. (0+3)

RECR F140Y Kayaking
1 Credit Offered As Demand Warrants
Instruction and practice activities at beginning through advanced kayaking. Graded Pass/Fail. (0+3)

RECR F140Z Canoeing
1 Credit Offered As Demand Warrants
Instruction and practice activities at beginning through advanced canoeing. Graded Pass/Fail. (0+3)

RECR F150A Beginning Aikido
1 Credit Offered As Demand Warrants
Aikido is a modern Japanese martial art that teaches coordination of mind and body to develop calmness in action and the strongest human condition. Includes KI extension exercises, basic rolling and falling, KI testing, and basic arts of self defense. Graded Pass/Fail. (0+3)

RECR F150B Intermediate Aikido
1 Credit Offered As Demand Warrants
Concentrates on learning to lead the KI development exercises. Breathing, movement, visualization techniques and moving meditation to teach how mind and body are interconnected. Advanced variations of the six basic self defense arts, advanced rolling and falling, Jo kata and individual and paired Bokken movements. Graded Pass/Fail. (0+3)

RECR F150C Advanced Aikido
1 Credit Offered As Demand Warrants
Instruction and practice in martial arts and combative activities at beginning through advanced levels including (but not limited to) boxing, aikido, karate and tae kwon do. Graded Pass/Fail. (0+3)

RECR F150D Beginning Karate
1 Credit Offered As Demand Warrants
Introduction to Shotokan karate, learning basic blocks, kicks and punches and defenses moves. Kata and kumite introduced. History and philosophy discussed. Graded Pass/Fail. (0+3)

RECR F150E Intermediate Karate
1 Credit Offered As Demand Warrants
Instruction and practice in intermediate karate. Graded Pass/Fail. (0+3)

RECR F150F Advanced Karate
1 Credit Offered As Demand Warrants
Instruction and practice in advanced karate. Graded Pass/Fail. (0+3)

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RECR F150G Beginning Kung Fu/Jiujitsu/Tae Kwon Do
1 Credit Offered As Demand Warrants
Emphasis on technique and conditioning. Beginning stances and etiquette. The three basic katas. Partner work, training in stretching, conditioning, and breath control. Both self-defense and sporting applications. Course will cover the eight Kung Fu animal systems. Activities will include but are not limited to: warm-ups, stretching, kicking, punching, kata, and partner work. Graded Pass/Fail. (0+3)

RECR F150H Intermediate Kung Fu/Jiujitsu/Tae Kwon Do
1 Credit Offered As Demand Warrants
Emphasis on technique and conditioning. Intermediate stances and etiquette will be covered, along with an understanding of intermediate techniques and some of their applications. Partner work will be taught, along with training in stretching, conditioning, and breath control. Both self-defense and sporting applications. Will cover the eight Kung Fu animal systems. Activities will include but are not limited to: warm-ups, stretching, kicking, punching, kata, and partner work. Graded Pass/Fail. (0+3)

RECR F150J Advanced Kung Fu/Jiujitsu/Tae Kwon Do
1 Credit Offered As Demand Warrants
Instruction and practice in advanced movements, weapons and martial arts certificate promotions. Graded Pass/Fail. (0+3)

RECR F150K Beginning Tai Chi
1 Credit Offered As Demand Warrants
Instruction and practice in beginning tai chi. Graded Pass/Fail. (0+3)

RECR F150L Intermediate Tai Chi
1 Credit Offered As Demand Warrants
Instruction and practice in intermediate tai chi. Graded Pass/Fail. (0+3)

RECR F150M Advanced Tai Chi
1 Credit Offered As Demand Warrants
Instruction and practice in advanced tai chi. Graded Pass/Fail. (0+3)

RECR F160A Soccer
1 Credit Offered As Demand Warrants
Instruction and practice in soccer. Graded Pass/Fail. (0+3)

RECR F160B Varsity Athletics
1 Credit Offered As Demand Warrants
Instruction and practice in varsity athletics. Graded Pass/Fail. (0+3)

RECR F160C Ultimate Frisbee
1 Credit Offered As Demand Warrants
Ultimate Frisbee, including catching and throwing the disc as well as both offensive and defensive strategies. Graded Pass/Fail. (0+3)

RECR F160D Volleyball
1 Credit Offered As Demand Warrants
Skills of volleyball, game rules, plays and terminology. Graded Pass/Fail. (0+3)

RECR F160E Beginning Archery
1 Credit Offered As Demand Warrants
Designed for the beginning through the intermediate archer. Use of re-curve or compound bows. Current Olympic-style shooting methods along with different styles of target and field archery. Graded Pass/Fail. Special fees apply. (0+3)

RECR F170A Beginning Ice Hockey
1 Credit Offered As Demand Warrants
Beginning skating, passing, shooting, and team play. Power play and penalty kill. Practice game situation plays: odd man rushes, below the goal line play, and positional play. The sport of ice hockey in a group environment. Graded Pass/Fail. (0+3)

RECR F170B Intermediate Ice Hockey
1 Credit Offered As Demand Warrants
Intermediate skating, passing, shooting, and team play. Power play and penalty kill. Practice game situation plays: odd man rushes, below the goal line play, and positional play. The sport of ice hockey in a group environment. Graded Pass/Fail. (0+3)

RECR F170C Advanced Ice Hockey
1 Credit Offered As Demand Warrants
Advanced skating, passing, shooting, and team play. Power play and penalty kill. Practice game situation plays: odd man rushes, below the goal line play, and positional play. The sport of ice hockey in a group environment. Graded Pass/Fail. (0+3)

RECR F170D Beginning Cross-Country Skiing
1 Credit Offered As Demand Warrants
Instruction and practice in beginning cross-country skiing. Graded Pass/Fail. (0+3)

RECR F170E Intermediate Cross-Country Skiing
1 Credit Offered As Demand Warrants
Instruction and practice in intermediate cross-country skiing. Graded Pass/Fail. (0+3)

RECR F170F Advanced Cross-Country Skiing
1 Credit Offered As Demand Warrants
Instruction and practice in advanced cross-country skiing. Graded Pass/Fail. (0+3)

RECR F170G Introduction to Ski Mountaineering
1 Credit Offered As Demand Warrants
Safe methods of winter travel in Alaska. Snowshoeing, skiing, gear and clothing, avalanche safety, climbing crevasse rescue skills, glaciers, winter camping skills, first aid. Graded Pass/Fail. (0+3)

RECR F170H Beginning Ice Skating
1 Credit Offered As Demand Warrants
Instruction and practice in beginning ice skating. Graded Pass/Fail. (0+3)

RECR F170J Intermediate Ice Skating
1 Credit Offered As Demand Warrants
Instruction and practice in intermediate ice skating. Graded Pass/Fail. (0+3)

RECR F170K Advanced Ice Skating
1 Credit Offered As Demand Warrants
Instruction and practice in advanced ice skating. Graded Pass/Fail. (0+3)

RECR F170L Speed Skating
1 Credit Offered As Demand Warrants
Instruction and practice in speed skating. Graded Pass/Fail. (0+3)

RECR F170M Curling
1 Credit Offered As Demand Warrants
Instruction and practice in curling. Graded Pass/Fail. (0+3)

RECR F170N Introduction to Winter Camping
1 Credit Offered As Demand Warrants
This course introduces students to outdoor adventure, travel and camping in Alaska while teaching fundamental outdoor survival skills. This course is designed to equip students with the necessary skills and knowledge to effectively and safely navigate with a map and compass, snowshoe, cross country ski, and camp in a wide variety of Alaskan conditions. Graded Pass/Fail. ***Prerequisites: Instructor permission required*** (1+0)

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RELIGION

RELG F110 **Isaac v Ishmael: The Israeli-Palestinian Conflict** (s)
1 Credit Offered As Demand Warrants
This course investigates the strife in its interlocking historical, political, religious, ethnic and archaeological dimensions. Competing claims to the land are scrutinized through the prisms of Judaism and Islam, the history, and other ideological movements. (1+0)

RELG F111 **Rebellious Women of the Bible** (h)
1 Credit Offered As Demand Warrants
A literary and sociological exploration into negative portrayals of the feminine within the Old and New Testament texts, including their original Ancient Near Eastern and Mediterranean cultural contexts as well as key interpretive traditions throughout history. (1+0)

RELG F113 **The Biblical Environment: Human Ecology in Ancient Israel** (s)
1 Credit Offered As Demand Warrants
An integrative survey of Ancient Israel's geographic and ecological features with respect to how they influence and were impacted by human efforts and energies. This course will examine textual sources as well as archaeological materials on behalf of reconstructing and comprehending such cultural ecosystems. (1+0)

RELG F205 **Introduction to the Bible** (h)
3 Credits Offered As Demand Warrants
A study of the Bible as literature of ancient Israel and the early Christian church. (3+0)

RELG F211 **Arctic Native Religion: Shamanism** (h)
2 Credits Offered As Demand Warrants
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. (2+0)

RELG F221 **Religions of the World** (h)
3 Credits Offered As Demand Warrants
A survey of the development of major religions of the Eastern and Western world including contemporary world religions. (3+0)

RURAL DEVELOPMENT

RD F100 **College Seminar**
1 Credit
Designed to serve as an academic, cultural, and social transition to the UAF campus. Through active learning RD F100 will provide an opportunity to develop skills and expertise that will lead to student success academically and in other areas of life, including decision-making, communication and overall personal development and growth. Students achieve and understand their responsibility for a successfully undergraduate coping with their personal transition to college life. Students will benefit from close interaction with instructors, as well as their peers, and will better understand their inherent value and the significant role they play in the university community. (1+0)

RD F110 **Alaska Native Claims Settlement Act: Land Claims in the 21st Century**
1 Credit Offered As Demand Warrants
Familiarize students with the land claims process and important Alaska Native Claims Settlement Act content, with focus on contemporary situations and explanation of land claims processes ongoing or recently completed in locations outside Alaska. (1.5+0)

RD F200 **Rural Development in the North** (s)
3 Credits Offered Fall
Examines sustainable community development efforts in Alaska and the circumpolar North. Provides an overview of community development processes and case studies with an emphasis on indigenous communities and peoples. (3+0)

RD F245 **Fisheries Development in Rural Alaska** (s)
3 Credits Offered As Demand Warrants
Introduction to fisheries development issues in rural Alaska communities, including basic concepts, strategies and contemporary cases. Topics include management of salmon and other fisheries, community development quotas and sustainable development efforts. Emphasis on environmental and cultural impacts of fisheries development. ***Prerequisites: ENGL F111X.*** (3+0)

RD F250 **Grant Writing for Community Development**
1-3 Credits Offered As Demand Warrants
Basic elements of grant proposals and processes of preparing proposals for governmental and private funding sources. Emphasis on applied skills through preparation of actual grant proposals. Graded Pass/Fail. ***Prerequisite: ENGL F111X or permission of instructor.*** (1-3+0)

RD F255 **Rural Alaska Land Issues** (s)
3 Credits Offered As Demand Warrants
Introduction to land and resource management issues affecting rural Alaska. Provides a history of aboriginal use and occupancy of land and an overview of land provisions in the Alaska Native Claims Settlement Act (ANCSA) and the Alaska National Interest Lands Conservation Act (ANILCA). Topics include using maps and land records, Native allotments, navigability, trespass and management of Native lands. (3+0)

RD F265 **Perspectives on Subsistence in Alaska**
3 Credits Offered As Demand Warrants
The socioeconomic, cultural, legal and political dimensions of subsistence in Alaska. (3+0)

RD F268 **Rural Tourism: Planning and Principles**
1-3 Credits Offered As Demand Warrants
Introduction to rural tourism planning and principles. Students examine rural tourism attractions and trends, tourism planning and policy formation, quality standards, and cultural and environmental impacts of tourism. Cross-listed with ABUS F268. (1-3+0)

RD F280 **Resource Management Research Techniques**
3 Credits Offered As Demand Warrants
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 F101 and BIOL F104X.*** (3+0)

RD F300 W **Rural Development in a Global Perspective** (s)
3 Credits Offered Fall
Relationship between rural communities and the global economy, with an emphasis on sustainable development. Highlights the multiple meanings of "development" and issues of population growth, environmental change, gender and indigenous peoples as they relate to rural development. Includes an introduction to the basic concepts and theories of development. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; junior standing; or permission of instructor.*** (3+0)

RD F315 **Tribal People and Development** (s)
3 Credits Offered Spring Odd-numbered Years
Comparative examination of socioeconomic development processes on tribal peoples in third and fourth world societies. Attention to implications of these processes for Alaska Native people. ***Prerequisites: Junior standing or permission of instructor.*** Cross-listed with ANS F315. (3+0)

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RD F325 **Community Development Strategies** (s)
3 Credits Offered Fall
Principles and strategies of asset-based development in rural communities throughout the world. Explores the history of community development ideas and case studies of specific strategies in Alaska and beyond. Topics include community healing, economic renewal and collaborative decision-making approaches. (3+0)

RD F350 O **Community Research in Indigenous Contexts**
3 Credits Offered Fall
Community research approaches and techniques. Emphasis on the role and need for community-based research and ethical issues associated with it. Students use a hands-on approach to learn about oral history documentation, surveys of community assets and needs, and basic community survey techniques. ***Prerequisites: COMM F131X or COMM F141X.*** (3+0)

RD F351 **Strategic Planning for Rural Communities**
3 Credits Offered Spring
Examination of the major components of planning and grant writing processes as they relate to community land use, business and social service projects. ***Prerequisites: Junior standing or permission of instructor.*** (3+0)

RD F352 **Rural Business Planning and Proposal Development**
3 Credits Offered Spring
Provides undergraduate students with an understanding of the principles and processes involved in strategic planning, business planning and proposal development with the focus on applications in rural Alaska. Focus is on meeting the unique planning needs of rural Alaska communities and organizations. (3+0)

RD F400 **Rural Development Internship**
3 Credits
Structured experience in an appropriate agency or corporate setting. Student and instructor work collaboratively to identify appropriate internship. Designed primarily for students with limited managerial experience. Approved project required. Enrollment only by prior arrangement with the instructor. (3+0)

RD F401 **Cultural Knowledge of Native Elders** (h)
3 Credits Offered Fall
Study with prominent Native tradition-bearers in Native philosophies, values and oral traditions. Traditional knowledge elicited through the cultural heritage documentation process. Analysis of existing interactions between cultural traditions and contemporary American life as experienced by Native elders. Cross-listed with ANS F401. (3+0)

RD F425 **Cultural Resource Issues** (s)
3 Credits Offered As Demand Warrants
An examination of the potential impacts of development projects on cultural systems. Explores data gathering, analytical techniques and use of impact data. ***Prerequisites: Junior standing or permission of instructor.*** (3+0)

RD F427 **Tribal Contracting and Compacting**
3 Credits Offered As Demand Warrants
Examines the history of federal Indian policy that led to self-determination tribal contracting and compacting. Public Law 93-638 will be studied and analyzed. Challenging issues that hampered tribal contracting will be identified. Case studies involving both tribal organizations and tribal governments will be studied. Current issues, such as the proposed regionalization of tribes for the purpose of contracting and compacting, will be examined. (3+0)

RD F430 **Indigenous Economic Development and Entrepreneurship**
3 Credits Offered As Demand Warrants
An understanding of the principles, strategies and practices of economic development and entrepreneurship with a focus on indigenous Alaska communities. Focus is on those sustainable economics, through culturally appropriate practices. (3+0)

RD F450 **Managing Rural Projects and Programs**
3 Credits Offered Fall
Examines appropriate management and accountability approaches for community-based programs and projects, particularly those found in rural and/or cross-cultural contexts. ***Prerequisites: RD F350 and RD F351 or permission of instructor.*** (3+0)

RD F451 **Human Resource Management for Indigenous Communities**
3 Credits Offered Fall
Provides an understanding of the principles and processes involved in human resource management especially as they apply within indigenous communities. Focus is on the relevance of human resource management in every unit, project or team, and on the unique human resource management needs of rural Alaska communities and organizations and how they can be met. (3+0)

RD F460 **Women and Development** (s)
3 Credits Offered As Demand Warrants
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. Cross-listed with WGS F460. (3+0)

RD F462 **Rural Health and Human Service Systems**
3 Credits Offered As Demand Warrants
Examine U.S. federal and state rural health and human service systems with specific emphasis on the tribal system in Alaska. The history, organization, work force, service delivery and financing of the U.S. and Canadian and Alaska systems are examined. Circumpolar challenges and policy issues in rural health and human service systems are explored. (3+0)

RD F465 **Community Healing and Wellness**
3 Credits Offered Fall
The history of education and the impact of religion and assimilation policies on the emotional and physical health of Alaska Natives and their communities. Traditional wellness issues and systems will also be researched from a global perspective. ***Prerequisite: Junior standing or permission of instructor.*** (3+0)

RD F475 W **Rural Development Senior Project**
3 Credits
Under faculty supervision, the student will complete a major theoretical, research and/or applied project which relates the student's applied emphasis area. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; senior standing; or permission of instructor.*** (3+0)

RD F492 **Rural Development Leadership Seminar**
1-3 Credits
Various topics of current interest and importance to the rural development majors. Topics announced prior to each offering. The course may be repeated for credit. Enrollment priority given to rural development majors. (1-3+0)

RD F600 **Circumpolar Indigenous Leadership Symposium**
3 Credits Offered Fall
Intensive face-to-face graduate seminar over a week-long period. Held every fall either in Fairbanks or Anchorage. This is a cornerstone course for all M.A. students in the program. The content focuses on indigenous leadership and includes presentations by practitioners from throughout Alaska and the circumpolar North. It also presents an orientation in depth to the graduate program. This course may be repeated once for elective credit. ***Prerequisites: Graduate standing or permission of instructor. Note: RD F600 is required of all graduate students in the Rural Development program. May be repeated once for credit.*** (3+0)

RD F601 **Political Economy of the Circumpolar North**
3 Credits Offered Fall
Interrelationships among rural communities in the circumpolar North and global socioeconomic, political and ecological systems. Includes major theoretical advances in our understanding of development in the 20th century. Uses

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a comparative case study approach to understand rapid socioeconomically and cultural change in the north. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

RD F608 **Indigenous Knowledge Systems**
3 Credits Offered Fall
A comparative survey and analysis of the epistemological properties, world views and modes of transmission associated with various indigenous knowledge systems. Emphasis on knowledge systems practiced in Alaska. ***Prerequisites: Graduate standing or approval of instructor.*** Cross-listed with CCS F608; ED F608; ANL F608. (3+0)

RD F612 **Traditional Ecological Knowledge**
3 Credits Offered Spring
Examines the acquisition and utilization of knowledge associated with long-term inhabitation of particular ecological systems and adaptations that arise from the accumulation of such knowledge. Attention will be given to the contemporary significance of traditional ecological knowledge as a complement to academic fields of study. ***Prerequisites: Graduate standing or approval of the instructor.*** Cross-listed with CCS F612. (3+0)

RD F625 **Community Development Strategies: Principles and Practices**
3 Credits Offered Spring
Provides graduate students with a detailed overview of principles and strategies of community development in rural Alaska and throughout the circumpolar North. Through in-depth case studies, it expands on materials and topics covered in Rural Development undergraduate courses on community development to explore how rural communities in diverse cultural, political and economic setting can build on local assets, skills and capacities to improve the lives of indigenous and other Northern residents. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

RD F650 **Community-Based Research Methods**
3 Credits Offered Spring
This graduate course provides students with opportunities for advanced exploration of community-based research principles and practices. In the course, emphasis is placed on developing a thorough understanding of the community research process from conceptualization to implementation and evaluation. It includes skill development of skills applicable to both quantitative and qualitative research. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

RD F651 **Management Strategies for Rural Development**
3 Credits Offered Spring
Provides an overview of the management by change and development within indigenous communities in the Circumpolar North. Looks closely at recent management strategies implemented in Alaska such as co-management of renewable resources, land management of Alaska Native corporations, cultural resource management, and the management of Alaska Native tribal governments, corporations and other organizations. Uses comparative case studies and effects of cultural and traditional values on management practices in different northern socio-cultural environments. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

RD F652 **Indigenous Organization Management**
3 Credits Offered As Demand Warrants
Purposes, structure and methods of management of particularly Northern indigenous organizations. The management of Alaska Native organizations will be compared with formal organizations established by indigenous peoples in other regions of the Circumpolar North. The concept of 'indigenous management' will be reviewed, as will perceptions of differences between leadership and management in both western and indigenous settings. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

RD F655 **Circumpolar Health Issues**
3 Credits Offered As Demand Warrants
Provides a comprehensive overview of major circumpolar health issues affecting Northern residents. Includes an analysis of health and traditional healing practices prior to contact. Examines the emergence of chronic diseases, problems of alcohol abuse and violence, efforts to combine traditional healing practices and Western medicine. Includes environmental health issues, including water, sewer, and food contamination. Overview of health care systems and public health infrastructure in the North. ***Prerequisites: Graduate standing or permission of instructor.*** (3+0)

RD F690 **Seminar in Cross-Cultural Studies**
3 Credits Offered As Demand Warrants
Investigation of current issues in cross-cultural contexts. Opportunity for students to synthesize their prior graduate studies and research. Seminar is taken near the terminus of a graduate program. ***Prerequisites: Advancement to candidacy and permission of student's graduate committee.*** Cross-listed with CCS F690; ED F690; ANL F690. (3+0)

RURAL HUMAN SERVICES

RHS F110 **Cross-Cultural Bridging Skills**
1 Credit Offered As Demand Warrants
Issues and impacts relevant to effective cross- cultural communication. Understanding barriers to effective cross-cultural communication in rural settings and development of effective cross-cultural communication skills from a Native perspective. Development of bridging and networking skills that integrate Native values and principles. Student must spend one week in intensive study at selected delivery site. (1+0)

RHS F115 **Issues of Personal Development**
2 Credits
Dynamics and impacts of personal development issues relevant to the delivery of rural human services focusing on understanding types, application and processes of personal development. Facilitating personal development through processes that integrate or reflect Native values and principles. Student must spend one week in intensive study at selected delivery site. (2+1)

RHS F120 **Family Systems I**
2 Credits
Survey of historical forces that exerted influence on Alaska Native families, the impacts of those forces and discussion of their contemporary effects from a Native perspective. Focus on developing options and strategies for developing healthy Native families as the foundation for healthy Native communities. Emphasis on developing the understanding and skills necessary to facilitate development and maintenance of healthy families through healthy individuals. Student must spend one week in intensive study at selected delivery site. (2+1)

RHS F130 **Processes of Community Change**
2 Credits
Contemporary foundations of rural social development and relevant issues from a Native perspective. Developing the understanding and skills necessary for facilitating positive individual, family and community development based on an ecological systems approach. Emphasis on developing the skills necessary to identify, develop and mobilize individual, family and community resources in rural Native communities. Student must spend one week in intensive study at selected delivery site. (2+1)

RHS F140 **Alaska Native Values and Principles**
1 Credit
Traditional Native values and principles, their applicability to today's world and issues relevant to their integration into today's lifestyles. Developing understanding and skills necessary for facilitating formulation of positive world views within Native individuals, families and communities. Explores the role of spirituality in a variety of Alaska Native cultures. Student must spend three days in intensive study at selected delivery site. (1+0)

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RHS F150 Introduction to Rural Counseling
2 Credits
Identification and examination of issues relevant to the delivery of rural counseling services focusing on developing the understanding and skills necessary for the effective delivery of rural counseling services. Opportunities for development of basic rural counseling skills with emphasis on integration of Native values and principles and exploring strategies that facilitate positive individual, family, and community growth and development through enhancement of healthy lifestyles in rural Native communities. Student must spend one week in intensive study at selected delivery site. (2+1)

RHS F220 Family Systems II
2 Credits
The dynamics and issues relevant to personal healing and recovery from a Native perspective focusing on developing the understanding and skills necessary to healing and recovery in Native individuals, families and communities. Emphasis on achieving healthy lifestyles through self-understanding based on truth, grieving and positive proactive repositioning. Student must spend one week in intensive study at selected delivery site. (2+1)

RHS F250 Rural Counseling II
2 Credits
Differences and similarities between Native and Western counseling skills. Issues relevant to the development and delivery of basic rural counseling skills and services. Focuses on identifying and building on individual, family and community strengths as the foundation for development of intervention strategies. Addresses the importance of integrating Native traditional values and principles into intervention strategies and service delivery. Emphasis on developing and enhancing basic rural counseling skills and short- and long-term intervention strategies. Student must spend one week in intensive study at selected delivery site. (2+1)

RHS F260 Addictions: Intervention and Treatment
2 Credits
Dynamics, issues, impacts, treatment options and intervention strategies relevant to behavioral and chemical addictions. Understanding addictive processes and developing treatment options and intervention strategies from a Native perspective. Emphasis on development of treatment options and intervention strategies that integrate Native values and principles. Student must spend one week in intensive study at selected delivery site. (2+1)

RHS F265 Interpersonal Violence
2 Credits Offered As Demand Warrants
Types, causes and impacts of interpersonal violence focusing on developing an understanding of interpersonal violence and development of treatment options and intervention strategies from a Native perspective. Emphasis on development of treatment options and intervention strategies that integrate Native values and principles. Student must spend one week in intensive study at selected delivery site. (2+1)

RHS F270 Networking, Negotiating and Conflict Resolution
2 Credits
The dynamics of networking, negotiation and conflict resolution from a Native perspective. Focusing on Alaska Native individuals, families and communities, identification, examination and discussion of issues relevant to developing effective communication skills. Emphasis on identifying and understanding issues impacting conflict resolution, focusing on developing and strengthening networking and negotiating skills relevant to the delivery of effective rural human service. Student must spend one week in intensive study at selected delivery site. (2+1)

RHS F275 Introduction to Recovery and Mental Illness
2 Credits Offered As Demand Warrants
Overview of mental illness and recovery issues. Emphasis on issues for practitioners in small, rural communities in Alaska. ***Prerequisites: RHS F150 or instructor permission. Recommended: RHS F250, RHS F115.*** (2+1)

RHS F285 Case Management
2 Credits
Identification and discussion of issues, components, procedures, responsibilities, skills and processes for case management in rural settings with diverse populations. Emphasis on case management processes unique to rural and village Alaska and to the fields of mental health, addictions and interpersonal violence. Oral and written communication skills essential to effective case management explored. Student must be willing and able to work independently outside the classroom and in the community. (2+1)

RHS F287 Rural Human Services Practicum
4 Credits
Personal and professional development, self-analysis and growth. Emphasis on developing the understanding and skills necessary to integrate Native healing theory and problem solving into the delivery of rural human services. Student must be willing and able to work independently outside the classroom and in the community. Taken as part of the final sequence of courses in the Rural Human Services certificate program, practicum provides students with 100 hours of supervised learning experience in an approved rural human service organization/agency. (4+0)

RHS F288 Directed Study: Resource Assessment
1 Credit
Identify and develop local, regional and statewide resources of benefit to the student's community. Focus on gathering information on resources and creating a human services resource directory relevant to the needs of individuals, families and communities. Emphasis on application of multicultural communication skills. Student must be willing and able to work independently outside the classroom and in the community. (1+0)

RHS F289 Directed Study: Community Development
1 Credit
Develop, implement and evaluate a village-based community development project through a supervised, professional experience. Focus on developing positive, effective, meaningful development projects that are culturally appropriate. Emphasis on developing a process that facilitates community ownership and responsibility for the project. Student must be willing and able to work independently outside the classroom and in the community. (1+0)

RHS F290 Grief and Healing
2 Credits Offered As Demand Warrants
Exploration of the dynamics of grief and healing from an Alaska Native perspective. Special emphasis on Native values and principles focused on developing culturally relevant, understandings, awarenesses and professional skills. (2+1)

RURAL NUTRITION SERVICES

RNS F101 Rural Nutrition and Health Change
1 Credit Offered As Demand Warrants
Introduction to healthful nutrition and tools for making health changes in a rural context. A beginning knowledge of healthy foods and activity for improved wellness outcomes. Skill development in meal planning, preparation and portioning, healthy meal makeovers, goal setting and maintenance. (14+0)

RNS F105 Nutrition Science for the Generations
3 Credits Offered As Demand Warrants
Basic applied nutrition science concepts in context of the life cycle presented in a culturally relevant framework. Introductory study of macro- and micronutrient requirements, food sources and physiologic and metabolic function with focus on relationship with health and change from traditional diets to contemporary Alaska Native diets. Overview of common nutritional problems affecting rural Alaskans. (0+0)

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RNS F120 **Alaska Native Food Systems**
3 Credits Offered As Demand Warrants
A comprehensive overview of Alaska Native food systems including harvest methods, nutrient values, cultural, political and economic impacts and changing relationships (spiritual, personal, environmental, community and diet). Traditional common elements of regional diets and nutrients that support health are identified, compared and contrasted with modern diets. Current food system issues are addressed. ***Co-requisite: RNS F105 or permission of instructor.*** (0+0)

RNS F201 **Community Nutrition Interventions**
2 Credits Offered As Demand Warrants
Students learn a broad range of skills for leading culturally relevant nutrition outreach and extension interventions in rural Alaska with attention to learning styles, lesson planning, project design, media and delivery methods. Focus on addressing nutrition and lifestyle changes to promote wellness and prevent nutrition-related diseases. ***Prerequisites: RNS F105 or permission of instructor. Recommended: RNS F120.*** (0+0)

RNS F210 **Introduction to Rural Nutrition Counseling**
2 Credits Offered As Demand Warrants
Identification and exploration of issues relevant to rural nutrition counseling services with focus on development of understanding and skills necessary for the effective delivery of culturally competent services. Opportunities for development of basic rural nutrition counseling skills with emphasis on integration of Alaska Native values and principles; and strategies that facilitate positive individual, family and community wellness through healthy lifestyle choices. ***Prerequisites: RNS F105 or permission of instructor. Recommended: RNS F120.*** (0+0)

RNS F250 **Current Topics in Rural Nutrition Services**
1-3 Credits
Various topics of current interest to students studying rural Alaskan community-based nutrition, behavioral health and health services. Topics announced prior to each offering and course may be repeated for credit. (0+0)

RNS F250P **Current Topics in Rural Nutrition Services**
1-3 Credits
Various topics of current interest to students studying rural Alaskan community-based nutrition, behavioral health and health services. Topics announced prior to each offering and course may be repeated for credit. Graded Pass/Fail. (0+0)

RNS F260 **Rural Nutrition Practicum**
2-3 Credits Offered As Demand Warrants
Provides students a supervised, community-based learning experience as they apply information from the RNS curriculum to nutrition outreach/extension. Focus is on the integration of nutrition science information with development of understanding and skills to provide culturally relevant community outreach/extension to rural Alaskan communities. ***Prerequisites: RNS F105. Co-requisite: RNS F201. Recommended: RNS F120.*** (0+0)

RUSSIAN

RUSS F100A **Elementary Russian 1A** (h)
3 Credits Offered Fall
An introductory course in the Russian language and culture with an emphasis on the spoken and written language. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements. (3+0)

RUSS F100B **Elementary Russian 1B** (h)
3 Credits Offered Spring
An introductory course in the Russian language and culture with an emphasis on the spoken and written language. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements. ***Prerequisites: RUSS F100A; or permission of instructor.*** (3+0)

RUSS F101 **Elementary Russian I** (h)
5 Credits Offered Fall
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 audiovisual materials. (5+0)

RUSS F102 **Elementary Russian II** (h)
5 Credits Offered Spring
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 audiovisual materials. ***Prerequisites: RUSS F101 or equivalent.*** (5+0)

RUSS F103 **Conversational Russian I** (h)
3 Credits Offered Spring Odd-numbered Years
Verbal skills improvement. Vocabulary is presented to improve speaking on specific topics. Graded Pass/Fail. ***Prerequisites: RUSS F101 and RUSS F102 or above or permission of instructor. Note: Does not satisfy core curriculum or foreign language major requirements.*** (3+0)

RUSS F201 **Intermediate Russian I** (h)
4 Credits Offered Fall
Continuation of RUSS F102. Increasing emphasis on reading ability and cultural materials. Conducted in Russian. ***Prerequisites: RUSS F102*** (4+0)

RUSS F202 **Intermediate Russian II** (h)
4 Credits Offered Spring
Continuation of RUSS F102. Increasing emphasis on reading ability and cultural materials. Conducted in Russian. ***Prerequisites: RUSS F201 or equivalent.*** (4+0)

RUSS F203 **Conversational Russian II** (h)
3 Credits Offered Spring Odd-numbered Years
Oral skills improvement. Vocabulary is presented to improve speaking on specific topics. Graded Pass/Fail. ***Prerequisites: RUSS F102 or above or permission of instructor. Does not satisfy core curriculum or foreign language major requirements.*** (3+0)

RUSS F301 W,O **Advanced Russian** (h)
3 Credits Offered Fall
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in Russian. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; RUSS F202; or instructor permission.*** (3+0)

RUSS F302 W,O **Advanced Russian** (h)
3 Credits Offered Spring
Discussions and essays on more difficult subjects or texts. Translations, stylistic exercises and special grammatical problems. Conducted in Russian. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; RUSS F301 or equivalent; or permission of instructor.*** (3+0)

RUSS F431 **Studies in Russian Culture** (h)
3 Credits Offered Fall Odd-numbered Years
Study of the cultures of the Russian-speaking world. May be repeated for credit if topic varies. ***Prerequisites: RUSS F301 or equivalent; junior standing or permission of instructor.*** (3+0)

RUSS F432 **Studies of Russian Literature** (h)
3 Credits Offered Spring Even-numbered Years
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. May be repeated for credit when topics vary. ***Prerequisites: RUSS F302 or equivalent, and at least junior standing, or permission of instructor.*** (3+0)

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RUSS F482 **Selected Topics in Russian Literature** (h)
3 Credits Offered Fall Even-numbered Years
Intensive course in literature focusing on nineteenth-century writers. Conducted in English. Note: Course may be repeated for credit if topic varies. ***Prerequisites: Junior standing, or permission of instructor.*** (3+0)

RUSS F484 **Russian and Soviet Cinema** (h)
3 Credits Offered Fall Odd-numbered Years
Study of Russian culture and society through the medium of film, focusing on the history of Russian cinema and genres. Films by award-winning directors. Designed to familiarize students with Russian history and culture from 1900s to the present. Readings and topics discussed reflect issues of current interest. Course may be repeated once. ***Prerequisites: Junior standing, or permission of instructor.*** (3+0)

RUSS F488 **Individual Study: Senior Project** (h)
3 Credits Offered As Demand Warrants
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 sixth week of the semester preceding the semester of graduation. Conducted in Russian. ***Prerequisites: At least 10 credits in upper division Russian or permission of instructor.*** (3+0)

SCIENCE APPLICATIONS

SCIA F100 **Introducing Astronomy**
1 Credit Offered As Demand Warrants
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. (1+0)

SCIA F105 **Field Biology**
2 Credits Offered Summer
Students will learn some of the techniques that are employed by wildlife biologists to study plants, fish and animals in the field and establish use of the scientific method through a student research project. (20+20)

SCIA F107 **Rock Identification**
1 Credit Offered As Demand Warrants
Physical properties of igneous, sedimentary and metamorphic rocks. Sight identification of rocks with emphasis on rocks found on the Seward Peninsula. (1+0)

SCIA F109 **Mineral Identification**
1 Credit Offered As Demand Warrants
Physical and field identifiable chemical properties of rocks and minerals. Emphasis on minerals found on the Seward Peninsula. (1+0)

SCIA F130 **Moose Ecology**
1 Credit Offered As Demand Warrants
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. (1+0)

SCIA F150 **Subarctic Horticulture**
1 Credit Offered As Demand Warrants
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. (0+3)

SCIA F157 **Alaska Plants**
1 Credit Offered As Demand Warrants
Introduction to the topics of plant taxonomy and identification with specific reference to common Alaskan plants and vegetation types. (1+0)

SCIA F161 **Birds of Alaska**
1 Credit Offered As Demand Warrants
Biology of birds including behavior, anatomy, physiology, ecology, systematics and field identification. (1+0)

SCIA F162 **Mammals of Alaska**
1 Credit Offered As Demand Warrants
Introduction to the mammals of Alaska and their importance to the local ecology and economy from a scientific research standpoint. Emphasis on important and/or common species for study of classification, habitat, life cycle and economic importance. ***Prerequisites: Background or interest in general science or natural history or permission of instructor.*** (1+0)

SOCIAL WORK

SWK F103 **Introduction to Social Work** (s)
3 Credits
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. (3+0)

SWK F220 **Ethics, Values and Social Work Practice** (s)
3 Credits
The professional nature and meaning of generalist social work practice. Examines the NASW code of ethics. Introduces interpersonal communication and interviewing. Assists students in making decisions about social work or other helping professions. ***Prerequisites: SWK F103 or permission of instructor.*** (3+0)

SWK F305 O **Social Welfare History** (s)
3 Credits Offered Fall
Analysis of social inequality and the U.S. social welfare system by tracing the historical development of government response to social inequality and exploring historical and persisting dilemmas in the provision of social welfare services. ***Prerequisites: COMM F131X or COMM F141X; SWK F103 or SOC/ANTH F100X.*** (3+0)

SWK F306 **Social Welfare: Policies and Issues**
3 Credits Offered Spring
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. ***Prerequisites: ANTH F100X or SOC F100X or SWK F103.*** (3+0)

SWK F310 **Fetal Alcohol Spectrum Disorders**
3 Credits Offered As Demand Warrants
An overview of fetal alcohol spectrum disorders with a particular focus on the needs, issues and programs specific to Alaska. (3+0)

SWK F320 W **Rural Social Work**
3 Credits Offered Spring
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: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; SWK F103.*** (3+0)

SWK F330 **Seminar in International Social Work**
3 Credits Offered Fall
International issues related to social work practice and social welfare policy. The focus of the seminar will be on global and international issues related to social and economic justice, distributive justice, and human and civil rights.

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Specific content is announced at registration. Course may be repeated once for credit when content varies. ***Prerequisites: SWK F103 or permission of instructor.*** (3+0)

SWK F341 **Human Behavior in the Social Environment I** (s)
3 Credits Offered Fall
Theoretical frameworks for organizing knowledge about personality development, social behavior and the organization of groups and communities. An emphasis is placed on the bio-psycho-social perspective of human development from birth through adolescence. ***Prerequisites: PSY F101; SOC/ANTH F100X; SWK F103.*** (3+0)

SWK F342 **Human Behavior in the Social Environment II**
3 Credits Offered Spring
Theoretical frameworks for organizing knowledge, personality development, social behavior and the organization of groups and communities. An emphasis is placed on the bio-psycho-social of human development young adulthood through later life. ***Prerequisites: PSY F101; SOC/ANTH F100X; SWK F103; social work major.*** (3+0)

SWK F350 W **Women's Issues in Social Welfare and Social Work Practices** (s)
3 Credits
Examination of theories and research concerning women's issues in the field of social work and in the social welfare system, with particular emphasis on women in poverty and women of color. Contemporary policy issues and strategies of empowerment will be covered. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; SWK F103 or SOC F100X; or permission of instructor.*** Cross-listed with WGS F350. (3+0)

SWK F360 **Child Abuse and Neglect**
3 Credits Offered Spring
Dynamics, implications and treatments of child abuse and neglect for individuals and families in rural and urban Alaska. ***Prerequisites: SWK F103 or permission of instructor.*** (3+0)

SWK F370 **Services and Support for an Aging Society** (s)
3 Credits Offered As Demand Warrants
An examination of the aging process, theories, political processes, social work generalist intervention and strategies and agency support for the aging population. The rapidly changing social and health issues of older adults are addressed in a multi-disciplinary and multi-cultural approach. (3+0)

SWK F375 W **Research Methods in Social Work**
3 Credits Offered Fall
Course has a two-fold objective: to help students become critical consumers of research in the social sciences and to allow students to carry out beginning research studies. Course sequentially covers phases of the research process, whether quantitative or qualitative. ***Prerequisites: ENGL 111X; ENGL F211X or ENGL 213X; SWK F103; or permission of instructor.*** (3+0)

SWK F440 **Social Work Practice with Military Families**
3 Credits
Explores the history and roles of social work with military families. Ethical concerns that emerge from social work practice with military families are addressed. Military social workers' roles in mental health programs, family advocacy, program administration, and policy making are examined. Addresses the issues that affect military families during times of deployment. ***Prerequisites: SWK F220; or permission of instructor.*** (3+0)

SWK F460 **Social Work Practice I**
3 Credits Offered Fall
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: Concurrent enrollment in SWK F461; Social Work major; senior standing.*** (3+0)

SWK F461 **Practicum in Social Work I**
3 or 6 Credits Offered Fall
Individual training and practice in a social service agency. Students signing up for 3 credits complete 100 hours; students signing up for 6 credits complete 200 hours of direct practice in an approved agency under the supervision of a field instructor. ***Prerequisites: Social Work major; senior standing; approval from practicum coordinator.*** (1+7 or 15)

SWK F463 **Social Work Practice II**
3 Credits Offered Spring
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 use of community associations and the informal helping network. Taken concurrently with SWK F464. ***Prerequisites: Social work major, senior standing, and concurrent enrollment in SWK F464.*** (3+0)

SWK F464 **Practicum in Social Work II**
3 or 6 Credits
Continuation of SWK F461; further direct practice experience in an agency. Students signing up for 3 credits complete 100 hours; students signing up for 6 credits complete 200 hours of practice in an approved agency under the supervision of a field instructor. Taken concurrently with SWK F463. ***Prerequisites: SWK F460; SWK F461; Social Work major; senior standing.*** (1+7 or 15)

SWK F466 **Practicum in Social Work II**
3 or 6 Credits
Further direct practice experience in an approved agency under the supervision of a field instructor. Students enrolled in 3 credits must complete 100 hours of practicum. Students enrolled in 6 credits must complete 200 hours of practicum. ***Prerequisites: SWK F460; SWK F461; SWK F463; SWK F464; Social Work major; senior standing.*** (0+7 or 15)

SWK F470 **Substance Abuse Theories and Treatment** (s)
3 Credits Offered As Demand Warrants
Examination of research and theories of chemical dependency from a social work, systems/ecological framework. Critically examines current theory and practice in terms of effectiveness, cultural appropriateness and validity with vulnerable populations. ***Prerequisites: SWK F103 or permission of instructor.*** (3+0)

SWK F484 **Seminar in Social Work Practice Areas**
3 Credits Offered As Demand Warrants
Problem areas in social work. Topics vary in different semesters, content announced in class schedule prior to each semester. Course may be repeated for credit when topic varies. ***Prerequisites: SWK F103 or permission of instructor.*** (3+0)

SOCIOLOGY

SOC F100X **Individual, Society and Culture** (s)
3 Credits
An examination of the complex social arrangements guiding individual behavior and common human concerns in contrasting cultural contexts. Also available via Independent Learning. ***Prerequisites: Placement in ENGL F111X or higher; or permission of instructor.*** (3+0)

SOC F201 **Social Problems** (s)
3 Credits Offered Fall
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. (3+0)

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SOC F202 **Sociology of Popular Culture** (s)
3 Credits Offered Spring Even-numbered Years
A critical examination of contemporary popular culture in sociological perspective. Introduces debates in the field of cultural sociology with special emphasis on the creation, distribution, consumption, and social impact of popular culture. Themes in course content will vary by semester including popular performances, leisure and entertainment, mass media, humor, food, and fashion. ***Recommended: SOC F100X.*** (3+0)

SOC F242 **The Family: A Cross-Cultural Perspective** (s)
3 Credits
Analysis of conceptual frameworks in family research, and a cross-cultural comparison of variations in family and kinship structures, both past and present. Examination of contemporary developments in family forms, the dynamic roles and patterns of relationships, and links with other social institutions. Emphasis on how social forces such as gender, race, ethnicity and social class shape the family and experiences of family life. Also available via Independent Learning. ***Prerequisites: SOC F100X or permission of instructor.*** (3+0)

SOC F250 **Introductory Statistics for Behavioral Sciences**
3 Credits Offered Spring
Statistics applied to social scientific topics. Includes 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. Also available via Independent Learning. ***Prerequisites: MATH F107X or MATH F103X or MATH F200X.*** Cross-listed with PSY F250. (3+0)

SOC F263 **Social Inequality and Stratification** (s)
3 Credits Offered Spring
Comprehensive analysis of current sociological debates and diverse theoretical approaches used to address social stratification and inequality. Examines the various dimensions of inequality, including those related to race, class and gender at the local, national and global levels. ***Prerequisites: SOC F100X and SOC F201 or permission of instructor.*** (3+0)

SOC F301 **Rural Sociology** (s)
3 Credits Offered As Demand Warrants
Analysis of sociological issues using rural communities and rurality as examples. Emphasis on issues of social justice and inequality. Part of focus is on rural communities of Alaska and the North. ***Prerequisites: One lower division social science course.*** (3+0)

SOC F303 **Early Sociological Thought** (s)
3 Credits Offered Spring
The major sociological theories of the classical period (19th and early 20th centuries) that have influenced contemporary sociology. ***Prerequisites: SOC F100X; SOC F201; SOC F263.*** (3+0)

SOC F308 **Race and Ethnic Relations** (s)
3 Credits Offered Fall
A sociological analysis of the principles and processes that shape relationships among racial and ethnic groups in Alaska, the U.S. and elsewhere in the world. Focus on the relations among dominant and subordinate groups in these societies, using sociological theory to understand the structural factors that shape intergroup relations. ***Prerequisites: SOC F100X; SOC F201; SOC F263.*** (3+0)

SOC F309 **Urban Sociology** (s)
3 Credits Offered As Demand Warrants
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. (3+0)

SOC F310 **Sociology of Aging** (s)
3 Credits
A sociological analysis of the process of aging in the U.S., Alaska and globally, with special attention on structural inequality and social justice issues. Also available via Independent Learning. ***Prerequisites: SOC F100X, SOC F201, and SOC F263.*** (3+0)

SOC F320 **Sociology of Gender** (s)
3 Credits
Comprehensive survey of sociological inquiry and feminist revisions for studying gender in U.S. society and culture. Interrogates the meanings of gender and the interactional, cultural, organizational and institutional arrangements that underlie the social construction of gender and gender inequality. ***Prerequisites: One lower-division social science course; WGS F201; or permission of instructor.*** Cross-listed with WGS F320. (3+0)

SOC F330 **Social Psychology** (s)
3 Credits Offered Spring
Analysis of intergroup 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. ***Prerequisites: PSY F101 or SOC F100X.*** Cross-listed with PSY F330. (3+0)

SOC F333 **Human Sexualities Across Cultures** (s)
3 Credits Offered Fall Odd-numbered Years
Exploration of how people in a variety of cultures, both contemporary and historical, construct the meaning and experience of sexuality, and express themselves as sexual beings. Interdisciplinary study includes psychology, sociology, anthropology, gender studies, and related fields, with particular focus determined by which department is offering the course. Also available via Independent Learning. ***Prerequisites: SOC F100X or SOC F201 or PSY F101 or WGS F201 or permission of instructor.*** Cross-listed with PSY F333; WGS F332. (3+0)

SOC F335 **Deviance and Social Control** (s)
3 Credits Offered Fall Odd-numbered Years
Analysis of classical and contemporary theoretical perspectives used to understand, explain and control criminal and non-criminal forms of deviance. Emphasis on the social dimensions of the creation of deviant categories and persons, the consequence of societal reactions to selected forms of deviance, and implications for social policy (prevention) and social control (corrections). ***Prerequisites: SOC F100X; SOC F201; or permission of instructor.*** (3+0)

SOC F345 **Sociology of Education** (s)
3 Credits Offered Fall Odd-numbered Years
Theoretical perspectives on various dimensions of the relationship between education and society, including the institutional context of schooling, the impact of schooling on social stratification, and social organization within the school and classroom. Special attention is given to issues of equity and contemporary educational reform efforts. ***Prerequisites: SOC F100X or permission of instructor.*** Cross-listed with ED F345. (3+0)

SOC F350 W **Sociology of Childhood** (s)
3 Credits Offered Fall Even-numbered Years
Concepts, theories and empirical research in the sociology of childhood. Broad themes include social structure and its consequences for children's lives, children's agencies, and the diversity of childhood experiences. Includes an overview of the problems children face, and recommendations for solutions. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** (3+0)

SOC F373 W **Research Methods in the Social Sciences** (s)
3 Credits Offered Fall
Course helps students become critical consumers of research in the social sciences and enables them to develop research proposals. The course covers phases of the research process, which comprises problem formulation, research designs, conceptualization, sampling and ethical issues. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; SOC F100X; SOC F201; SOC F263.*** (3+0)

SOC F405 O **Social Movements and Social Change** (s)
3 Credits
Focus on collective behavior, social change and social movements at the local, national and global levels. Analysis will include historical, technological and

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legal implications of large-scale social change. ***Prerequisites: COMM F131X or COMM F141X; SOC F100X; SOC F201; SOC F263 and 3 credits of SOC at F300-level; or permission of instructor.*** (3+0)

SOC F407 O **Work and Occupations** (s)
3 Credits Offered As Demand Warrants
The sociology of work and occupations. Local, regional, national and global industries, work sites and workers will be examined, using sociological theories and concepts. Analysis includes structural issues of inequality in employment practices and work sites. ***Prerequisite: COMM F131X or COMM F141X; SOC F100X; SOC F201; SOC F263; 3 credits in SOC at the F300-level.*** (3+0)

SOC F435 **Sociology of Law** (s)
3 Credits
Addresses the social nature of legal decision-making, the social context of law and the reciprocal relations between law, society and justice. Explores how race, class and gender are implicated in the law, and the role of law in social control, in social change and in our everyday lives. ***Prerequisites: SOC F100X; junior standing; or permission of instructor. Recommended: SOC F303.*** (3+0)

SOC F440 O **Environmental Sociology** (s)
3 Credits
Course considers how political, social and economic factors have come to shape human patterns of interaction with the natural environment. Provides a sociological perspective on environmental problems such as environment and health, disaster, environmental policy, environmental risk, sustainability, human and animal interactions, environmental justice and social movements. ***Prerequisites: COMM F131X or COMM F141X; SOC F100X; SOC F201; SOC F263; 3 credits in SOC at the the F300-level; or permission of instructor.*** (3+0)

SOC F460 **Global Issues in Sociological Perspective** (s)
3 Credits
A sociological analysis of global issues, with different overarching themes depending on world events and the research interests of the instructor. Issues of global social justice and inequality are explored, and sociological and other theories are applied. ***Prerequisites: One lower social science course; junior standing or permission of instructor.*** (3+0)

SOC F480 W **Qualitative Social Science Research** (s)
3 Credits Offered Spring Odd-numbered Years
Introduction to classical and contemporary research within the qualitative (or interpretive) paradigm of social science. Discusses the theoretical frameworks, historical traditions, epistemological and ethical issues of qualitative approaches. Uses hands-on experience in the practicalities and excitement of a variety of methods for gathering qualitative data and conducting qualitative analysis. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; one lower-division social science research methods course; or permission of instructor.*** Cross-listed with PSY F480. (3+0)

SOC F490 **Capstone Seminar** (s)
3 Credits Offered Spring
Review of the discipline of sociology with a focus on the theoretical perspectives and methodological tools of the discipline, key substantive issues in the field and the role of sociology in contemporary society. ***Prerequisites: SOC F303; SOC F373; Sociology major with senior standing; or permission of instructor.*** (3+0)

SOFTWARE ENGINEERING

SWE F471 W **Software Engineering** (m)
3 Credits Offered Fall
Introduction to basic software engineering principles, techniques, methods and standards as applied to the engineering of complex software systems. Topics from software system development process models, multiple view system modeling and specification using UML, classification of software systems, project management and legal issues. ***Prerequisites: Senior standing; CS F311; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** Cross-listed with CS F471. (3+0)

SWE F670 **Computer Science for Software Engineers**
3 Credits
An overview and survey of the theoretical underpinnings of computer science. Topics are taken from the areas of algorithms and data structures; computer architecture; computer networks, communications and operating systems; computability and formal languages; languages and compilation. Also available via Independent Learning. ***Prerequisites: Graduate Standing.*** Cross-listed with CS F670. (3+0)

SWE F671 **Advanced Software Engineering**
3 Credits Offered Spring
Advanced software development as an engineering discipline. Includes investigation of current tools, standards, foundation and trends in software engineering, from component-ware, software system composition, e-systems, software architecture and CASE tools. ***Prerequisites: SWE F471.*** Cross-listed with CS F671. (3+0)

SWE F672 **Software Process Improvement**
3 Credits Offered Spring Odd-numbered Years
Commonly applied methods for improving the software development process. Emphasis on the Software Engineering Institute's capability maturity model, and specifically on the key process areas of level 2 and level 3 of that model. These include software standards. ***Prerequisites: SWE F671 or permission of instructor.*** Cross-listed with CS F672. (3+0)

SWE F673 **Software Requirements Engineering**
3 Credits Offered As Demand Warrants
Focus on the requirements analysis phase of the software development life cycle. Ways to obtain, analyze and specify complete and correct sets of requirements. Critique of selected requirements analysis models. Study of current large scale software developments that have failed or are failing. Development of software requirements specifications for large and real software systems via team efforts. Also available via Independent Learning. ***Prerequisites: SWE F671 or permission of instructor.*** Cross-listed with CS F673. (3+0)

SWE F674 **Software Architecture**
3 Credits Offered Spring
Software architectural styles are introduced and defined as structural descriptions of software systems. Methods for constructing and binding software systems are introduced and specified as operational views. The architectural approach, as a classical engineering method for describing structure and behavior of technical artifacts, will be applied for the composition of software systems. ***Prerequisites: SWE F671.*** Cross-listed with CS F674. (3+0)

SWE F690 **Graduate Seminar and Project**
1-6 Credits Offered Fall
First semester of a two-semester seminar in which students will, individually or in teams, work on and present the results of major programming or literature survey projects in computer science and software engineering. Written and oral reports will be required. Graded Pass/Fail. ***Prerequisites: 12 credits in graduate CS or SWE courses or permission of Computer Science or Software Engineering graduate advisor.*** Cross-listed with CS F690. (1-6+0)

SWE F691 **Graduate Seminar and Project**
3 Credits Offered Spring
Second semester of a two-semester seminar in which students will, individually or in teams, work on and present the results of major programming or literature survey projects in computer science. Written and oral reports will be required. Graded Pass/Fail. ***Prerequisites: SWE F690, 12 credits in graduate CS or SWE courses; or permission of Computer Science or Software Engineering graduate advisor.*** Cross-listed with CS F691. (3+0)

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SPANISH

SPAN F100A **Elementary Spanish 1A** (h)
3 Credits Offered As Demand Warrants
Spanish language and culture with an emphasis on spoken and written language. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements. (3+0)

SPAN F100B **Elementary Spanish 1B** (h)
3 Credits Offered As Demand Warrants
Spanish language and culture with an emphasis on spoken and written language. Does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements. ***Prerequisites: SPAN F100A; or permission of instructor.*** (3+0)

SPAN F101 **Elementary Spanish I** (h)
5 Credits Offered Fall
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 audiovisual materials. (5+0)

SPAN F102 **Elementary Spanish II** (h)
5 Credits Offered Spring
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 audiovisual materials. ***Prerequisites: SPAN F101; or SPAN F100A and SPAN F100B; or the equivalent.*** (5+0)

SPAN F103 **Conversational Spanish I** (h)
3 Credits Offered Fall, Summer, As Demand Warrants
Verbal skills improvement. Includes role playing, problem solving and situational conversation. Conducted entirely in Spanish. Note: Does not satisfy core curriculum or foreign language major requirements. Graded Pass/Fail. ***Prerequisites: SPAN F100A and SPAN F100B; or SPAN F101; or permission of instructor.*** (3+0)

SPAN F201 **Intermediate Spanish I** (h)
3 Credits Offered Fall
Continuation of SPAN F102. Increasing emphasis on reading, writing and oral ability. Conducted in Spanish. ***Prerequisites: SPAN F102 or equivalent; or permission of instructor.*** (3+0)

SPAN F202 **Intermediate Spanish II** (h)
3 Credits Offered Spring
Continuation of SPAN F201. Increasing emphasis on reading, writing and oral ability. Conducted in Spanish. ***Prerequisites: SPAN F201 or equivalent; or permission of instructor.*** (3+0)

SPAN F203 **SI SI! (Summer Intensive Spanish Immersion)** (h)
3 Credits Offered Summer As Demand Warrants
Intensive two week language immersion. Verbal skills improvement. Includes role playing, problem solving and situational conversation. Conducted entirely in Spanish. Note: Does not satisfy core curriculum. ***Prerequisites: SPAN F201; F202 or equivalent; or permission of instructor.*** (3+0)

SPAN F221 **Cultures and Civilizations of Latin America**
3 Credits Offered Spring Odd-numbered Years
Designed to provide students of Spanish language and others interested in Hispanic culture with background in the geography, history, religions, cultures and politics of Latin America. We will also explore the changes and challenges facing contemporary Latin American society. Conducted in English. ***Recommended: SPAN F102.*** (3+0)

SPAN F222 **Cultures and Civilizations of Spain** (h)
3 Credits Offered Spring Even-numbered Years
Designed to provide students of Spanish language and others interested in Hispanic culture with background in the geography, history, religions, cultures, and politics of Spain. Explores the changes and challenges facing contemporary Spanish society. Conducted in English. ***Recommended SPAN F102.*** (3+0)

SPAN F301 O **Advanced Comprehension and Conversation** (h)
3 Credits Offered Fall
Focus on increasing writing and listening comprehension. Discussions, presentations and exercises to enhance verbal competence. Conducted in Spanish. Note: Course may be repeated for credit if topic varies. ***Prerequisites: COMM F131X or COMM F141X; SPAN F202 or equivalent; or instructor permission.*** (3+0)

SPAN F302 W **Introduction to Literary Comprehension** (h)
3 Credits Offered Spring
An introduction to the understanding and analysis of Hispanic literature, with particular emphasis on the forms of written Spanish. Conducted in Spanish. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; SPAN F202 or equivalent; or permission of instructor.*** (3+0)

SPAN F311 **Advanced Spanish Composition** (h)
3 Credits
Practice of formal and informal writing styles in Spanish. Focus on vocabulary and stylistic issues. Course offered via distance learning. ***Prerequisites: SPAN F202. Recommended: ENGL F111.*** (3+0)

SPAN F317 **Advanced Spanish Grammar** (h)
3 Credits
Grammatical concepts in Spanish. Focus on more difficult grammatical structures. Course offered via distance learning. ***Prerequisites: SPAN F202 or equivalent or permission of instructor.*** (3+0)

SPAN F431 O **Senior Seminar** (h)
3 Credits Offered Fall
Topics may include literature, arts and cultures of the Spanish-speaking world. Conducted in Spanish. Students may repeat course for credit if topic varies. ***Prerequisites: COMM F131X or COMM F141X; SPAN F302 or equivalent; senior standing; or permission of instructor.*** (3+0)

SPAN F432 W **Studies of Hispanic Literature** (h)
3 Credits Offered Spring
Intensive study of authors, literary texts, movements, genres, themes and/or critical approaches. Note: Course may be repeated for credit if topic varies. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; SPAN F302 or equivalent; junior standing; or permission of instructor.*** (3+0)

SPAN F482 **Selected Topics in Spanish** (h)
3 Credits Offered As Demand Warrants
Intensive course focusing on topics not covered in SPAN F431 or SPAN F432. Note: Course may be repeated for credit if topic varies. ***Prerequisites: SPAN F302 or equivalent; junior standing, or permission of instructor.*** (3+0)

SPAN F488 **Individual Study: Senior Project** (h)
3 Credits Offered As Demand Warrants
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 sixth week of the semester preceding the semester of graduation. Offered normally in the semester preceding the student's graduation. Conducted in Spanish. ***Prerequisites: At least 10 credits in upper-division Spanish or permission of instructor.*** (3+0)

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STATISTICS

STAT F200X **Elementary Probability and Statistics** (m)
3 Credits
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 methods. Also available via Independent Learning. ***Prerequisites: MATH F107X or MATH F161X or placement; or permission of instructor.*** (3+0)

STAT F300 **Statistics** (m)
3 Credits Offered Spring; Fall Odd-numbered Years
A calculus-based course emphasizing applications. Topics include probability, joint and conditional probability, expectation and variance 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 F200X and STAT F300 to meet the requirement of a year's sequence course in statistics. ***Prerequisites: MATH F200X or MATH F262X or MATH F272X or placement or equivalent.*** (3+0)

STAT F401 **Regression and Analysis of Variance** (m)
4 Credits
Thorough study of multiple regression including multiple and partial correlation, the extra sum of squares principle, indicator variables, polynomial models, model selection techniques and assessment of underlying assumptions. Analysis of variance and covariance for multifactor studies in completely random and randomized complete block designs, multiple comparisons and orthogonal contrasts. Matrix concepts for linear models are taught as needed. Also offered in Juneau as demand warrants. ***Prerequisites: STAT F200X [STAT S273-J] or STAT F300 or permission of instructor.*** (3+3)

STAT F402 **Scientific Sampling** (m)
3 Credits Offered Fall
Sampling methods, including simple random, stratified and systematic and one- and two-stage cluster sampling; estimation procedures, including ratio and regression methods; special area and point sampling procedures; optimum allocation. Adaptive and probability sampling; bootstrapping and basic mark-and-recapture. ***Prerequisites: STAT F200X or STAT F300 or permission of instructor.*** (3+0)

STAT F454 **Statistical Consulting Seminar**
1 Credit Offered Spring
Introduction to statistical consulting and data analysis. Emphasis on interaction with researchers and identification of scientific and statistical issues relevant to the research problem. Includes regular class meetings as well as supervised meetings with researchers. Designed to combine mathematical statistics with applications from a variety of fields. Students from any field of study with strong quantitative skills are encouraged to enroll. May be repeated for a total of three credits. Graded Pass/Fail. ***Prerequisites: STAT F200X or STAT F300; STAT F401; and completion or concurrent enrollment in MATH F408; or permission of instructor.*** Stacked with STAT F654. (1+0)

STAT F461 **Applied Multivariate Statistics** (m)
3 Credits Offered Spring Even-numbered Years
Estimation and hypothesis testing, multivariate normality and its assessment, multivariate one and two sample tests, confidence regions, multivariate analysis of variance, discrimination and classification, principal components, factor analysis, clustering techniques and graphical presentation. Statistical computing packages utilized in assignments. ***Prerequisites: STAT F401 or permission of instructor.*** (3+0)

STAT F480 **Topics in Statistics** (m)
1 Credit Offered As Demand Warrants
Short, intensive, selected topics of applied statistics. Example topics: nonlinear regression, logistic regression, repeated measures, the SAS language and the S-Plus package. Course may be repeated for credit if topic varies. ***Prerequisites: STAT F200X or STAT F300; STAT F401 or equivalent.*** (1+0)

STAT F602 **Experimental Design**
3 Credits Offered Fall Even-numbered Years
Constructing and analyzing designs for experimental investigations; completely randomized, randomized block and Latin-square designs, split-plot design, incomplete block design, confounded factorial designs, nested designs, treatment of missing data, comparison of designs. ***Prerequisites: STAT F401 or permission of instructor.*** (3+0)

STAT F605 **Spatial Statistics**
3 Credits Offered Spring Even-numbered Years
Stochastic processes and variograms. Geostatistics including kriging and spatial design of experiments. Point processes including model selection and K-functions. Lattice process models and image analysis. Computer-intensive statistical methods. ***Prerequisites: STAT F401; MATH F200X-F202X or equivalent; or permission of instructor.*** (3+0)

STAT F611 **Time Series**
3 Credits Offered Spring Odd-numbered Years
An applied course in time series and repeated measure analysis. Autoregression and moving average models. Estimation of parameters and tests. Prediction. Spectral analysis. Analysis of repeated measures data. ***Prerequisites: STAT F401 or permission of instructor.*** (3+0)

STAT F621 **Distribution-Free Statistics**
3 Credits Offered Fall Odd-numbered Years
Methods for distribution-free (nonparametric) statistical estimation and testing. These methods apply to many practical situations including small samples and non-Gaussian error structures. Univariate, bivariate, and multivariate tests will be presented and illustrated using a variety of applications and data sets. ***Prerequisites: STAT F200X [STAT S273-J].*** (3+0)

STAT F631 **Categorical Data Analysis**
3 Credits Offered Fall Odd-numbered Years
Statistical methods designed for count and categorical data. Contingency tables. Logistic and related models. Loglinear models. Repeated categorical responses. Survival data. ***Prerequisites: STAT F401 or permission of instructor.*** (3+0)

STAT F641 **Bayesian Statistics**
3 Credits Offered Fall Even-numbered Years
Bayes' Rule, univariate Bayesian models, conjugate models and noninformative priors. Multiparameter models. Hierarchical models, general linear model and mixed models. Study of posterior simulation techniques including Markov Chain Monte Carlo and the Gibbs Sampler. Will involve analysis of data sets using WinBUGs and R. ***Prerequisites: MATH F201X; MATH F371-F408 or STAT F651; or permission of instructor*** (3+0)

STAT F642 **Bayesian Decision Theory for Resource Management**
4 Credits Offered Spring Even-numbered Years
Application of decision theory to problems in natural resources management. Students will learn to perform Bayesian calculations and uncomplicated decision analysis themselves. ***Prerequisites: FISH F621 of FISH F630; or permission of instructor.*** Cross-listed with FISH F642. (2+2)

STAT F651 **Statistical Theory I**
3 Credits Offered Fall
Probability and distribution of random variables. Conditional probability and stochastic independence. Distributions of functions of random variables. Expected values. Limiting distributions. Distributions derived from the normal distribution. Designed to combine mathematical statistics with applications from a variety of fields. Students from any field of study with strong quantitative skills are encouraged to enroll. ***Prerequisites: MATH F202X; MATH F314; previous statistics course; or permission of instructor.*** (3+0)

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STAT F652 **Statistical Theory II**
4 Credits Offered Spring Odd-numbered Years
Estimation of parameters. Efficiency and sufficiency. Hypothesis testing. The Neyman-Pearson paradigm and likelihood ratio tests. Data summaries. Bootstrap. Comparison of two samples. Linear least squares. Analysis of categorical data. Bayesian inference. Designed to combine mathematical statistics with applications from a variety of fields. Students from any field of study with strong quantitative skills are encouraged to enroll. ***Prerequisites: STAT F651.*** (4+0)

STAT F653 **Statistical Theory III — Linear Models**
3 Credits Offered Spring Even-numbered Years
Best linear unbiased estimation, Gauss-Markov theory and applications, maximum likelihood estimation for linear models, multivariate normal distributions, linear regression and analysis of variance, weighted regression, robust and nonlinear regression, logistic regression, Poisson regression, autoregressive models and the General Linear Model. Designed to combine mathematical statistics with applications from a variety of fields. Students from any field of study with strong quantitative skills are encouraged to enroll. ***Prerequisites: STAT F651 or STAT F401; MATH F200X; MATH F201X; MATH F202X; MATH F314.*** (3+0)

STAT F654 **Statistical Consulting Seminar**
1 Credit Offered Spring
Introduction to statistical consulting and data analysis. Emphasis on interaction with researchers and identification of scientific and statistical issues relevant to the research problem. Includes regular class meetings as well as supervised meetings with researchers. Designed to combine mathematical statistics with applications from a variety of fields. Students from any field of study with strong quantitative skills are encouraged to enroll. May be repeated for a total of three credits. Graded Pass/Fail. ***Prerequisites: STAT F200X or STAT F300; STAT F401; and completion or concurrent enrollment in MATH F408; or permission of instructor.*** Stacked with STAT F454. (1+0)

STAT F661 **Sampling Theory**
3 Credits Offered Juneau As Demand Warrants
Statistical theory for sampling and sample surveys. Choice of method, power and sample size considerations, treatment of sampling and non-sampling biases. Sampling methods based on detectability. Adaptive sampling. Spatial sampling. Mark and recapture methods. The jackknife, the bootstrap and resampling plans. ***Prerequisites: STAT F200X [STAT S273-J]; STAT F401; or permission of instructor.*** (3+0)

THEATRE

THR F101 **Theatre Practicum** (h)
1-3 Credits
Participation in drama workshop or lab production as performer or technical staff member. Credit in this course may not be applied to a major program in Theatre. (0+0)

THR F121 **Fundamentals of Acting** (h)
3 Credits
This class introduces basic stage acting techniques for people with little or no prior acting experience. The course will emphasize physical, emotional, and imaginative awareness and will include monologue and scene work, character analysis and improvisation. (3+0)

THR F130A **Beginning Jazz Dance**
1 Credit
Develop a repertoire of jazz dance movement and terminology including plies, isolations, stretches, traveling steps, battements, pas de burres, jazz slides and turns. History of jazz dance. Graded Pass/Fail. Cross-listed with RECR F130A. (0+3)

THR F130B **Intermediate Jazz Dance**
1 Credit
Develop a repertoire of a jazz dance movement and terminology including plies, isolations, stretches, traveling steps, battements, pas de burres, jazz slides and turns. History of jazz dance. Graded Pass/Fail. Cross-listed with RECR F130B. (0+3)

THR F130C **Advanced Jazz Dance**
1 Credit
Develop a repertoire of jazz dance movement and terminology including plies, isolations, stretches, traveling steps, battements, pas de burres, jazz slides and turns. History of jazz dance. Graded Pass/Fail. Cross-listed with RECR F130C. (0+3)

THR F130D **Modern Dance**
1 Credit
Develop a repertoire of modern dance movement and terminology including contraction and release, swings, triplets, fall and recovery, rolls and improvisations. Graded Pass/Fail. Cross-listed with RECR F130D. (0+3)

THR F130E **Beginning Ballroom Dance**
1 Credit
Students with little or no background in social dance. Our aim is to have a good time and build a strong foundation for future learning. Dances covered include waltz, foxtrot, single-count swing, east coast swing, salsa, cha cha, merengue and, time permitting, polka. Graded Pass/Fail. Cross-listed with RECR F130E. (0+3)

THR F130F **Intermediate Ballroom Dance**
1 Credit
Dances covered include waltz, foxtrot, single-count swing, east coast swing, salsa, cha cha, merengue and, time permitting, polka. Our aim is to have a good time and build a strong foundation for future learning. This course is for students with a beginning background in social dance. Graded Pass/Fail. Cross-listed with RECR F130F. (0+3)

THR F130G **Advanced Ballroom Dance**
1 Credit
Dances covered include waltz, foxtrot, single-count swing, salsa, cha cha, merengue and, time permitting, polka. Our aim is to have a good time and build an even stronger foundation for future learning. This course is for students with an intermediate background in social dance. Graded Pass/Fail. Cross-listed with RECR F130G. (0+3)

THR F130H **Beginning Ballet**
1 Credit
Instruction and practice in ballet at beginning levels. Graded Pass/Fail. Cross-listed with RECR F130H. (0+3)

THR F130J **Intermediate Ballet**
1 Credit
Instruction and practice in ballet at intermediate levels. Graded Pass/Fail. Cross-listed with RECR F130J. (0+3)

THR F130K **Advanced Ballet**
1 Credit
Instruction and practice in ballet at advanced levels. Graded Pass/Fail. Cross-listed with RECR F130K. (0+3)

THR F130L **Square Dance**
1 Credit
Instruction and practice in square dance. Graded Pass/Fail. Cross-listed with RECR F130L. (0+3)

THR F130M **Round Dance**
1 Credit
Instruction and practice in round dances. Graded Pass/Fail. Cross-listed with RECR F130M. (0+3)

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THR F130N **Middle Eastern Dance**
1 Credit Offered As Demand Warrants
Designed for students with some or no background in Middle Eastern dance or anyone who wants to refine their technique and gain a deeper understanding of the different styles, history and evolution of Middle Eastern dance from social dance to performance art. Majority of semester will focus on basic dance vocabulary and choreography as well as dancing with props such as veils and finger cymbals. Graded Pass/Fail. Cross-listed with RECR F130N. (0+3)

THR F130Q **Beginning Hip Hop**
1 Credit Offered As Demand Warrants
Introduction to basic movements and terminology of hip hop dances and associated body movements. Students will gain these principles and an ability to execute maneuvers presented in class. Graded Pass/Fail. Cross-listed with RECR F130Q. (0+3)

THR F130R **Beginning Break Dance**
1 Credit Offered Fall
Introduction to basic movements and terminology of break dancing, and an understanding of associated body movements. Students will gain an understanding of these principles and an ability to execute maneuvers presented in class. Graded Pass/Fail. Cross-listed with RECR F130R. Graded Pass/Fail. (0+3)

THR F161 **Introduction to Alaska Native Performance** (h)
3 Credits
For Native and non-Native students with no prior acting or theatre experience. Includes both academic and practical components to examine traditional Alaska Native theatre, mythology, ritual, ceremony and performance methods. Application of exercises and developmental scenes drawn from Alaska Native heritage. Cross-listed with ANS F161. (2+3)

THR F172 **Previsualization and Preproduction for Digital Cinema** (h)
3 Credits Offered Spring Even-numbered Years
Previsualization is a collaborative process that generates preliminary versions of shots or sequences, predominantly using 3D animation tools and a virtual environment. It enables filmmakers to visually explore creative ideas, plan technical solutions and communicate a shared vision for efficient production. Laying a foundation for cinema production, this course will explore screenwriting, storyboarding, previsualization animation, animatics and film pre-production approaches. This course will focus on developing original stories for animation or dramatic film productions and preparing those concepts for cinematic production. Cross-listed with FLM F172 and ART F172. (3+0)

THR F190 **Audition or Portfolio Review Participation**
0 Credits
Theatre majors are required to participate in auditions and/or portfolio reviews every semester. Theatre majors are also expected to attend all Theatre UAF productions (tickets are provided free) and to attend all theatre department "town" meetings. Graded Pass/Fail. (0+0)

THR F191 **Audition or Portfolio Review Participation**
0 Credits
Theatre majors are required to participate in auditions and/or portfolio reviews every semester. Theatre majors are also expected to attend all Theatre UAF productions (tickets are provided free) and to attend all theatre department "town" meetings. Graded Pass/Fail. (0+0)

THR F200X **Aesthetic Appreciation: Interrelation of Art, Drama and Music** (h)
3 Credits
Understanding and appreciation of art, drama and music through an exploration of their relationships. Topics include the creative process, structure, cultural application and diversity, the role of the artist in society, and popular movements and trends. ***Prerequisites: Placement in ENGL F111X or higher; sophomore standing; or permission of instructor.*** Cross-listed with ART F200X; MUS F200X. (3+0)

THR F215 **Dramatic Literature** (h)
3 Credits
Reading, analyzing, and categorizing plays as maps for theatrical production. Students will be exposed to a broad range of plays from the classical and contemporary Western canon. Established theories and critical writings about the structure of plays will be explored and discussed to facilitate understanding of dramatic structure and dramaturgy. ***Prerequisites: ENGL F11X or concurrent enrollment, or permission of instructor.*** (3+0)

THR F220 **Voice and Speech for the Actor**
3 Credits
Vocal training for actors through introduction to Fitzmaurice and Linklater techniques. Course will include basic vocal anatomy, introduction to the International Phonetic Alphabet and monologue performance. Special fees apply. ***Prerequisites: THR F121 or permission of instructor.*** (2+2)

THR F221 **Acting II** (h)
3 Credits
Continued development of physical, emotional and imaginative awareness. This is a scene study class with emphasis on naturalistic modern material. ***Prerequisites: THR F121 and THR F215; or permission of instructor.*** (1+4)

THR F225 **Movement for the Actor** (h)
3 Credits
Introduces principles of stage movement for actors. Attention will be paid to physical exercise, relaxation, centering and expressing creative impulse. Course will include introduction to the contact improvisation technique, clowning, stage combat, physical character development and scene work. Special fees apply. ***Prerequisites: THR F121.*** (1+4)

THR F235 **The Collaborative Process** (h)
3 Credits Offered Spring Even-numbered Years
Interactive role-based course providing insight, practice and theory in the process of collaboration across specialties when forging a theatrical production. Hierarchical and consensus-based models for artistic collaboration will be introduced and discussed in light of artistic concept, resource allocation, production budgets and individual personalities and temperaments inherent in the field of theatrical production, with an emphasis on a best-practice approach in the field. Students will incur additional expenses of $50 - $100 for supplies and theatre tickets. ***Prerequisites: THR F215*** (3+0)

THR F241 **Basic Stagecraft** (h)
4 Credits
Materials of scene construction, painting, lighting design and their use, safe use of standard construction tools, fundamentals of theatre drafting. Theatre majors are encouraged to fulfill this requirement by their junior year. Special fees apply. (2+5)

THR F245 **Stage and Film Production Management** (h)
3 Credits
Define and develop organizational skills to be a successful stage or film production manager. Creation of a prompt script including all forms and schedules necessary, working with actors, directors and designers. Creation of film production schedules, call sheets, shooting scripts, location management, and union requirements. Cross-listed with FLM F245. (3+0)

THR F247 **Introduction to Theatrical Design** (h)
3 Credits
Introduction to all the design elements used in the theatre. Analysis of line, texture, color, and how they relate to designing for the theatre including costumes, scenery and lighting. Cross-listed with ART F247. (3+0)

THR F254 **Costume Design and Construction I** (h)
3 Credits
Introduction to theory and practice of costume design for the theatre, methods used to make costumes out of a variety of media. Projects include simple hat making, mask making, sewing and related costume crafts. Special fees apply. (3+0)

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THR F271 **Let's Make a Movie!**
3 Credits Offered Fall
Produce a short dramatic video including concept and script development, basic camera and shooting techniques, working with actors, directing fundamentals, location scouting, production schedule development, basic non-linear editing techniques, and DVD authoring. Students do not need previous experience making movies to take this class. Special fees apply. ***Recommended: THR F121; THR F241.*** Cross-listed with FLM F271. (3+0)

THR F280 **Modern Dance** (h)
2 Credits
Introduction to dance combines elements of modern, jazz and improvisational styles. Includes warm-up, stretches, locomotor movements (walking, running and leaping), set dance combinations, and improvisational activities. Specific readings, individual journals and informal dance presentations required. Open to all experience levels. (1.5+1.5)

THR F290 **Audition or Portfolio Review Participation II**
0 Credits
Theatre majors are required to participate in auditions and/or portfolio reviews every semester. Theatre majors are also expected to attend all Theatre UAF productions (tickets are provided free) and to attend all theatre department "town" meetings. Graded Pass/Fail. (0+0)

THR F291 **Audition or Portfolio Review Participation II**
0 Credits
Theatre majors are required to participate in auditions and/or portfolio reviews every semester. Theatre majors are also expected to attend all Theatre UAF productions (tickets are provided free) and to attend all theatre department "town" meetings. Graded Pass/Fail. (0+0)

THR F301 **Theatre Practicum** (h)
1-3 Credits
Participation in drama workshop or lab production as performer or technical staff member. Credit in this course may not be applied to a major program in Theatre. (0+0)

THR F310 **Acting for the Camera** (h)
3 Credits
Students will apply skills introduced in Fundamentals of Acting, to acting for the camera. By acting in numerous on-camera exercises, television and film scenes, the class will expand each performer's expressiveness for the camera. May be repeated twice for credit. Special fees apply. ***Prerequisites: THR F121. Recommended prerequisite: THR F221.*** Cross-listed with FLM F310. (3+0)

THR F321 **Acting III** (h)
3 Credits
This course introduces the principles of stage movement and period acting. The class will include introduction to movement dynamics, contact improvisation, stage combat, physical character development, and period scene study. Special fees apply. ***Prerequisites: THR F220 and THR F221*** (3+0)

THR F331 **Directing Film / Video** (h)
3 Credits
Introduction to the history, theory and basic concepts of film stage direction. Includes interpretative script analysis, creative visualization, conceptualization, use of space, working with actors and designers, and direction of short scenes and videos. Special fees apply. ***Prerequisites: THR F121; THR F215; or permission of instructor.*** Cross-listed with FLM F331. (1+4)

THR F332 **Stage Directing I** (h)
3 Credits
History, theory and basic concepts of stage direction. Interpretive script analysis, creative visualization, conceptualization, use of space, and focus, working with actors and designers and possible direction of short scenes. ***Prerequisites: THR F121; THR F215, THR F235*** (3+0)

THR F334 W **Movies and Films: Watching and Analyzing** (h)
3 Credits
Rotating thematic topics in the art of classic cinema (films) and the popular mass media (movies). Comparative analysis of classics and recent motion pictures is used to present elements of film language, analysis and criticism in this writing intensive course. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** Cross-listed with FLM F334. (3+0)

THR F341 **Intermediate Stagecraft** (h)
3 Credits
An examination of the less common scenic materials with methods and techniques for their use. Students will spend approximately $40 for materials. Special fees apply. ***Prerequisites: THR F241 or permission of instructor. Recommended: THR F246.*** (2+2)

THR F343 **Scene Design** (h)
3 Credits
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. Students will spend approximately $40 for materials. ***Prerequisites: THR F241 or permission of instructor.*** (3+0)

THR F347 O **Lighting Design** (h)
3 Credits
Principles and techniques of theatrical lighting design. The student will conduct practical experiments and design projects applying the experience gained from the experiments. Students will spend approximately $40 for materials. Also available via Independent Learning. ***Prerequisites: COMM F131X or COMM F141X. Recommended: THR F241; THR F247.*** Cross-listed with ART F347; FLM F347; JRN F347. (3+0)

THR F348 **Sound Design for the Entertainment Industry** (h)
3 Credits Offered Spring Odd-numbered Years
Exploration and application of the elements of design as they relate to sound for theatre, dance, film, video, and other art forms, and life in American and other cultures. Production work is required. Special fees apply. ***Recommended: THR F241; THR F247.*** Cross-listed with FLM F348. (2+2)

THR F351 **Makeup for Theatre** (h)
3 Credits Offered Spring
Theatrical makeup for actors, teachers, directors and other theatre workers; makeup materials and use, age and character makeup, injuries and horror, Kabuki, cross-gender, animal, illusory and plastic relief, crepe hair beards, and influence of lighting. Students will spend approximately $85 for materials and book. (1+4)

THR F355 **History of Fashion and Dress** (s)
3 Credits Offered As Demand Warrants
Social history of costume in Western civilization, from Ancient Greece to the present time. Includes instruction in the methods of research used to find visual source material and assignments that exercise these research skills. ***Recommended: HIST F101 or HIST F102.*** (3+0)

THR F356 **Costume Design** (h)
3 Credits Offered Fall Odd-numbered Years
Through a series of projects, play readings and drawing exercises, students learn how to successfully analyze text, communicate production concepts and express costume ideas using sketching, rendering and collage. Projects also introduce students to the practical skills needed to realize a costume design within the limits of a theatre's resources and needs. ***Prerequisites: ART F104 or ART F105 or permission of instructor.*** (3+0)

THR F361 **Advanced Alaska Native Performance**
3 Credits
In-depth study of Alaska Native theatre techniques and tradition, including traditional dance, song and drumming techniques, mask characterizations and performance application and presentation of a workshop production developed by the students during the semester. ***Prerequisites: ANS/THR F161.*** Cross-listed with ANS F361. (2+3)

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THR F410 Styles Acting (h)
3 Credits
Exposure to the rigorous physical, vocal, intellectual and emotional demands of period acting. Focus on monologue and scene study from texts including Greek tragedy, commedia, Shakespeare and Elizabethan theatre, the theatre of Moliere and restoration comedy. May be repeated twice for credit. ***Prerequisites: THR F121; THR F220; THR F221. Recommended: THR F225.*** Cross-listed with FLM F310. (3+0)

THR F411 W Theatre History I (h)
3 Credits
Theatrical form and practice from its origins in storytelling and ritual through the French Neoclassic theatre. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; junior standing; or permission of instructor.*** (3+0)

THR F412 W Theatre History II (h)
3 Credits
Theatrical form and practice from the English Restoration through the present. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; junior standing; or permission of instructor.*** (3+0)

THR F413 W Playscript Analysis (h)
3 Credits
Investigation of the structure of playscripts designed to develop skills in analysis and interpretation for performance. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; junior standing; or permission of instructor.*** (3+0)

THR F416 W Performance Studies Abroad (h)
6 Credits
Intensive course for actors, directors, designers, technicians and playwrights interested in script development/training with the participation of international theatre professionals. Develop new scripts and performances in a multicultural environment under the supervision of a theatre faculty member. Previous faculty and student work abroad includes: Russia, Zambia, South Africa and Scandinavia. Course requirements vary according to the project. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** Stacked with NORS F616. (3+9)

THR F417 Internship in Theatre Practice
1-6 Credits Offered As Demand Warrants
Supervised practical work experience to provide application of course work in a professional, semi-professional or community theatre environment. Internships can be in direction, acting, design, management and technical theatre. Internships have included Perseverance Theatre, Fairbanks Shakespeare Theatre, Fairbanks Drama Association, and Out North Theatre. Course may be repeated twice for a maximum of 12 credits. Note: Internship must be arranged in coordination with advisor, student and host institution. ***Prerequisites: Completed at least 18 THR credits; upper-division standing; permission of instructor. Recommended: Previous THR credits should be in the student's concentration area: direction, design, etc.*** (0+0)

THR F423 Acting IV (h)
3 Credits Offered Spring Even-numbered Years
This course will focus on the refinement of physical, vocal, emotional, and imaginative awareness. This is a scene study class which will include audition technique, acting for the camera skills, and preparation for the professional world of acting. ***Prerequisites: THR F121, THR F215, THR F220, THR F221 and THR F321; or permission of instructor.*** (3+0)

THR F431 Advanced Film Production
3 Credits Offered Spring Even-numbered Years
In depth investigation into the history, theory and concepts of film and video direction. Script preparation, storyboarding and animatics, blocking actors and staging the camera, sound design, special effects, and editing techniques will be explored. Each student will produce their own capstone film project. ***Prerequisites: FLM F273, FLM F331, FLM/JRN F290. Recommended: FLM F271, FLM F334.*** Cross-listed with FLM F431. (3+0)

THR F432 Stage Directing II (h)
3 Credits Offered As Demand Warrants
In seminar and practicum form, the practice, discussion and analysis of the myriad responsibilities of the Stage Director. Aspects of Stage Direction that can be practiced within a class context will be given a practical frame for experimental learning. Other aspects will either be simulated or engaged in theoretically. Business practices and ethics will be addressed. An attempt will be made to accommodate the specific aesthetic and artistic goals of the participating students. ***Prerequisites: THR F332 and at least one of the following: THR F321, THR F343, THR F347, THR F351 or THR 356.*** (3+0)

THR F447 Lighting Design II (h)
3 Credits
Further exploration and application of elements of design (color, texture, intensity, line, composition) as they relate to lighting for theatre, dance, other art forms and life. Production work required. ***Prerequisites: THR F347 or permission of instructor.*** (2+2)

THR F456 Advanced Topics in Costume Design and Construction (h)
3 Credits
Rotating thematic topics in advanced methods and materials used in the design and construction of costumes for the theatre. Topics may include projects in design, advanced sewing and pattern drafting, millinery, masks, corsetry, or painting and dyeing, as demand warrants. May be repeated twice for credit. Special fees apply. ***Prerequisites: THR F254 or permission of instructor.*** (3+0)

THR F470 Advanced Film and Video Directing (h)
3 Credits
In depth investigation into the history, theory, basic concepts of film and video direction, script preparation, story board, blocking actors and staging the camera and sound, editing. Projects include directing and shooting short videos. Special fees apply. ***Recommended: THR/FLM F331.*** Cross-listed with FLM F470. (1+6)

THR F482 Dance Performance (h)
2 Credits
Exploration and performance of expressive dance and movement. Includes development of an original choreography for public performance. Course is for advanced dance, acting and directing students with varying experience. ***Prerequisites: THR F280 or movement performance experience.*** (1.5+1.5)

THR F485 Edward Albee Prince William Sound Theatre Conference (h)
3 Credits
Intensive, practical theatre experience in new play development, workshops and readings. Offered in conjunction with the 10-day Edward Albee Prince William Sound Theatre Conference in Valdez, Alaska. Includes working with leading American playwrights and directors to develop new plays. (Student pays separate conference fee of about $150 directly to conference.) ***Prerequisites: Theatre experience or courses in any of the following areas: acting, directing, playwriting, dramaturgy and design; or permission of instructor.*** (1+6)

THR F488 W Dramatic Writing (h)
3 Credits Offered Even Alternate Fall
Introduction to the craft of dramatic writing for theater and film, with an emphasis on dramatic storytelling. Course will focus on giving students a practical understanding of the uses of story structure, setting, character, plot and dialog, and how these elements work together to create compelling drama. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.*** Cross-listed with ENGL F488; FLM F488. (3+0)

THR F499 Thesis Project (h)
3 Credits
Final step in acting/directing/design or playwright training which involves performing a leading role on main stage, or a one-person show, or a directing/designing/writing project for the UAF season. ***Prerequisites: Permission of instructor.*** (1+4)

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TRADES AND TECHNOLOGY

TTCH F099 Practicum
1-3 Credits
Individual work and development of skills learned in prior courses. (0+0)

TTCH F101 Machine Woodworking I
2 Credits
Introduction to woodworking power machines (circular saw, jointer, radial arm saw), joints, fasteners, and different stains and finishes used on wood. (2+0)

TTCH F105 Basic Electrical Wiring
1 Credit
Fundamental skills and career opportunities in electrical wiring. (1+0)

TTCH F110 Basic Safety Training for Building Maintenance and Repair
2 Credits
How to care for tools and use them safely, properly and efficiently using HILTI standards, follow OSHA standards to maintain a safe workplace and identify unsafe workplace situations. These standards ensure safety in construction operations. Upon passing the HILTI and OSHA testing standards, certification will be given. (2+0)

TTCH F113 Basic Plumbing
3 Credits
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. (3+0)

TTCH F117A Four-Cycle Engine Repair
1 Credit
Four-cycle engine theory and principles of operation. Classroom activities include step-by-step disassembly, inspection and assembly of a four-cycle engine. Graded Pass/Fail. (1+0)

TTCH F117B Two-Cycle Engine Repair
1 Credit
Two-cycle engine theory and principles of operation. Classroom activities include step-by-step disassembly, inspection and assembly as well as familiarization with tools used in small engine repair. Graded Pass/Fail. (1+0)

TTCH F120 Refrigeration and Air Conditioning
4 Credits
Fundamentals of refrigeration and air conditioning theory in preparation for further study. Topics include compressors, condensers, evaporators, metering devices and related components. Assumes no previous knowledge. (4+0)

TTCH F125 Introduction to Carpentry for Building Maintenance and Repair
3 Credits Offered As Demand Warrants
Uses of lumber, commonly used hardware fasteners, types of tools and their uses, how to care for tools and use them safely, properly and efficiently. Building projects are completed which apply what was learned in the classroom. These skills are needed in maintenance positions in private businesses, schools and hospitals and in residential construction and renovation. (2+2)

TTCH F130 Blueprint and Schematic Reading
3 Credits
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. (3+0)

TTCH F131 Mathematics for the Trades
3 Credits
Practical application of mathematics for industry and preparation for union apprenticeship programs, 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. (3+0)

TTCH F132 Building Maintenance Materials
3 Credits
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. (3+0)

TTCH F133 Basic Hand and Power Tools
3 Credits
Uses, care and maintenance of hand and power tools. Familiarity and skill development with these tools through construction of shop projects. (3+0)

TTCH F134 Maintenance Safety
1 Credit
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. (1+0)

TTCH F138 Introduction to Electricity for Building Maintenance and Repair
2 Credits Offered As Demand Warrants
Commonly used materials in the electrical trade. Provides basic understanding of the National Electrical Code, local codes and schematic drawings. Stresses safe installation and correct tool usage. Familiarity and skills are cultivated through projects. (1.5+2)

TTCH F140 Introduction to Plumbing for Building Maintenance and Repair
2 Credits
Basic plumbing materials that may be used in any plumbing system, how to use plumbing tools and completing selected projects. Includes using drawings to identify types of plumbing branches and bends, pipefittings, correct plumbing layout aids, and installation applications. (1.5+2)

TTCH F147 Burner Maintenance and Repair
1 Credit
Instruction in troubleshooting 10 common problems, reading manuals, changing parts, setting electrodes, changing nozzles, understanding controls and ordering replacement parts. (1+2)

TTCH F148 Heating Systems for Building Maintenance and Repair
2 Credits
Comprehensive instruction for people employed in installation and maintenance of heating systems. Installation and maintenance applications of fuel transfer, theories of combustion, nozzles, combustion chambers, heat exchangers, draft regulators, stacks, controls and sizing of systems. ***Recommended: TTCH F138.*** (1+1.5)

TTCH F150 Introduction to Painting for Building Maintenance and Repair
2 Credits
Surfaces and surface protection, sealants and fillers, paint categories and application tools. Hands-on projects are completed which apply skills learned in the classroom. These skills are needed in facility maintenance positions in businesses such as schools and hospitals, and in residential construction and renovation. (1+1.5)

TTCH F151 Hazardous Paint Certification
1 Credit
Potential health hazards and information on safety practices will be addressed. (1+0)

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TTCH F214 Heating Systems Design
3 Credits
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. (3+0)

TTCH F225 Advanced Carpentry for Building Maintenance and Repair
3 Credits Offered As Demand Warrants
Expand carpentry skills in measuring, plan reading, site layout skills and working with elevations. ***Prerequisites: TTCH F125 or permission of instructor.*** (2+2)

TTCH F250 Advanced Painting for Building Maintenance and Repair
2 Credits
Proper methods for finishing, patching and spray painting drywall. Skills studied in the classroom will be developed in various projects. ***Prerequisites: TTCH F150 or permission of instructor.*** (1+2)

TTCH F282 Selected Topics in Process Unit Design
4 Credits
Hands-on execution and application of automated process designs as they evolve from ideas to implementation. Emphasis will be on the expanded study of the purpose, utilization and adaptation of tools, machines, materials and systems to the solutions of automated process unit design problems. Course may be repeated three times for credit. Special fees apply. ***Prerequisites: PRT F101; PRT F110; or permission of instructor. Recommended: PRT F130; PRT F140.*** (2+4)

TTCH F300 Internship in Technology
1-3 Credits
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. May be repeated for a maximum of 9 credits. Graded Pass/Fail. ***Prerequisites: Upper-division standing and permission of instructor.*** (0+12)

TTCH F301 Technology and Society
3 Credits
Concepts of social change related to the effects of technology on society, and application of the concepts and processes of technology as they evolve from ideas to implementation. Emphasis on expanded study of the creation, use and adaptation of tools, machines, materials and systems to the solutions of problems and the extension of human potential. Available via Independent Learning. ***Prerequisites: Upper-division standing or permission of instructor.*** (3+0)

TTCH F485 Advanced Technical Experiences: Discipline Area
1-6 Credits
Formal technical upgrade 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 will be used. Graded Pass/Fail. ***Prerequisites: Upper-division standing and permission of instructor.*** (1-6+0)

TRIBAL MANAGEMENT

TM F101 Introduction to Tribal Government
3 Credits
Comprehensive study of tribal government and politics in rural Alaska. Explores the differences and relationships among tribal, state and federal government. Presents key concepts for building and enhancing tribal government for building program and institutional development. ***Prerequisites: Must be familiar with computer and related word processing and spreadsheet programs.*** (3+0)

TM F105 Introduction to Tribal Finance Applications
3 Credits
Tools and methods for the management and oversight of tribal government programs and organizations in rural Alaska. Student evaluation includes how well the student affects changes in tribal operations and tribal management. ***Prerequisites: Must be familiar with computer and related word processing and spreadsheet programs.*** (3+0)

TM F110 Tribal Court Development for Alaska Tribes
1 Credit
An introduction to tribal court development in Alaska. Will focus on a practical understanding of key concepts for developing a tribal court process in rural Alaska. Will explore the differences and relationships between tribal, state, and federal justice systems, including concepts of jurisdiction and due process. Graded Pass/Fail. (1+0)

TM F111 Children's Topics in Tribal Justice
1 Credit Offered As Demand Warrants
Overview of children's cases in tribal justice. Preparation for informed participation in the tribal justice system as it affects children and families. Topics such as the Indian Child Welfare Act, child protection, child custody and tribal adoptions will be addressed. Graded Pass/Fail. ***Recommended: TM F110.*** (0+0)

TM F112 Federal Indian Law for Alaska Tribes
1 Credit Offered As Demand Warrants
Introduction to federal Indian law, focusing on the impacts to modern Alaskan tribal governments. Particular attention will be given to the relationship between federal Indian law and tribal justice systems in Alaska. Graded Pass/Fail. ***Recommended: TM F110.*** (0+0)

TM F113 Tribal Code Development
1 Credit Offered As Demand Warrants
Focuses on development of written tribal codes, including the importance of incorporating traditional unwritten laws and values into modern written codes. Particular attention will be given to the relationship between written tribal laws and tribal justice systems. Graded Pass/Fail. ***Recommended: TM F110.*** (0+0)

TM F114 Tribal Justice Responses to Community and Domestic Violence
1 Credit Offered As Demand Warrants
Focuses on role of the tribal justice system in responding to community and domestic violence, including the use of tribal protective orders under the federal Violence Against Women Act (VAWA). Graded Pass/Fail. ***Recommended: TM F110.*** (0+0)

TM F115 Tribal Court Administration
1 Credit Offered As Demand Warrants
Focuses on the administration of tribal courts in Alaska and the role of the tribal court clerk. Key concepts and strategies related to the effective administration and operation of tribal justice systems in Alaska will be discussed. Graded Pass/Fail. ***Recommended: TM F110.*** (0+0)

TM F116 Juvenile Justice in Tribal Court
1 Credit Offered As Demand Warrants
Focuses on concepts and strategies impacting juveniles in tribal justice systems. Special focus will be given to issues of juvenile delinquency, strategies in sentencing and community monitoring, as well as, youth courts and community justice theories. Graded Pass/Fail. ***Recommended: TM F110.*** (0+0)

TM F117 Tribal Court Enforcement of Decisions
1 Credit Offered As Demand Warrants
Focuses on role of the tribal government and justice system in enforcement of tribal court decisions in rural Alaska, including monitoring of offenders. Key concepts and strategies related to enforcement of tribal court decisions,

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including writing effective orders and monitoring of offenders, will be discussed. Graded Pass/Fail. *Recommended: TM F110.* (0+0)

TM F118 Tribal Community and Restorative Justice
1 Credit Offered As Demand Warrants
Focuses on concepts and strategies in community justice, restorative justice, tribal peacemaking and other prominent judicial theories impacting modern Alaskan tribal jurisprudence. Graded Pass/Fail. *Recommended: TM F110.* (0+0)

TM F120 Introduction to Tribal Natural Resource Management
3 Credits
Introduction to natural resource management, including tribal natural resource management. Examines the basic goals and principles of (tribal) natural resource management, including the roles of traditional knowledge and scientific research in supporting management activities. (3+0)

TM F130 Introduction to Utility Management
2 Credits
Principles and practices involved in managing small water and wastewater facilities in rural Alaskan communities, including basic terms, key concepts and an overview of five management functions: organizational, financial, personnel, planning and operational management. Graded Pass/Fail. (2+0)

TM F131 Organizational Management for Utilities
2 Credits
Organizational principles and practices involved in managing small water and wastewater facilities in rural Alaskan communities, including an overview of responsibilities, governance authority and accountability. Graded Pass/Fail. (2+0)

TM F132 Operations Management for Utilities
2 Credits
Focus is on specific skills and knowledge that a rural utility manager needs to efficiently oversee a rural utility. Includes understanding what the operator's duties are and how much time is needed to perform them, as well as related knowledge and skills about safety, scheduling, data collection, public relations, inventory control and contingency planning. Graded Pass/Fail. *Recommended: TM F130.* (2+0)

TM F134 Financial Management for Utilities
2 Credits
The components of financial management needed to successfully oversee a rural utility. Basic procedures and process will be covered, including materials on financial reporting, fund accounting, budgeting, collections, risk management and financial audits. Graded Pass/Fail. *Recommended: TM F130.* (2+0)

TM F136 Personnel Management for Utilities
2 Credits
Tools a rural utility manager needs to keep the work force performing to its fullest. Topics include: personnel policies and procedures; safety policy and programs; selecting and hiring staff; orientation and training; regulations and the law; people, communications and conflict; motivation and management. Graded Pass/Fail. *Recommended: TM F130.* (2+0)

TM F138 Planning for Utilities
2 Credits
Leads the student through the whole planning process as it applies to managing small water and wastewater facilities in rural Alaska communities. Includes why it is important to get the public involved, how to develop water/sewer alternatives and evaluate them, and how to get a construction project started. Graded Pass/Fail. *Recommended: TM F130.* (2+0)

TM F170 Fundamentals of Rural Transportation
4 Credits Offered As Demand Warrants
Provides an introduction to managing the unique multi-modal transportation system in rural Alaska. Course is designed for entry-level transportation managers or those new to rural transportation issues. Graded Pass/Fail. (4+0)

TM F171 Introduction to the Indian Reservation Roads Program
1 Credit Offered As Demand Warrants
Introduction to the federal Indian Reservation Roads (IRR) program. The course will cover the history of the program, including recent program changes and their applicability to and effect on Alaska Native Tribes and communities in rural Alaska. The fundamentals of implementing a tribal IRR program will be presented. Graded Pass/Fail. (1.25+0)

TM F172 Conducting a Rural Transportation Inventory
1 Credit Offered As Demand Warrants
Provides students with hands-on experience in conducting a field inventory of transportation facilities. Emphasis on meeting the inventory requirements for the Indian Reservation Roads program *Recommended: TM F171.* (17+0)

TM F173 Traffic Monitoring for Rural Transportation
1 Credit Offered As Demand Warrants
Provides students with the basic tools to conduct a traffic monitoring program in rural Alaska. Topics covered include: the purpose of traffic monitoring; terms, definitions and acronyms commonly used in traffic monitoring; deciding where and when to monitor; required and optional data; data collection tools and techniques; adjustment factors and adjusted average daily traffic (ADT) calculations and data reporting. Emphasis is placed on meeting the ADT requirements of the Indian Reservation Roads program. Graded Pass/Fail. *Recommended: TM F171; TM F172.* (21+0)

TM F174 Basics of a Good Gravel Road
1 Credit Offered As Demand Warrants
Provides students with a basic understanding of what makes a good gravel road. This course is designed for entry-level transportation managers as well as transportation maintenance and operations staff. Graded Pass/Fail. *Recommended: TM F171; TM F172; TM F173.* (21+0)

TM F182 Introduction to NEPA for Rural Transportation
1 Credit Offered As Demand Warrants
An introduction to the federal National Environmental Policy Act (NEPA) and its applicability to rural transportation projects in Alaska. The course will cover the history of NEPA, including recent policy changes affecting Alaska Native Tribes. The course will present an overview of the NEPA process, the categories of NEPA documents, the NEPA requirements for different types of transportation projects, and how to effectively participate in agency-led NEPA processes. Graded Pass/Fail. (1+0)

TM F199 Tribal Management Practicum I
3 Credits
Professional and personal development while working in a rural service organization. Emphasis on developing the understanding and skills necessary for delivery of rural services. Course is guided by an academic advisor. Student must be willing and able to work independently outside the classroom and in the community. *Prerequisites: Must be familiar with computer and related word processing and spreadsheet programs.* (3+0)

TM F201 Advanced Tribal Government
3 Credits Offered Spring
Comprehensive study of tribal government and politics in rural Alaska. Explores the differences and relationships among tribal, state and federal government. Presents key concepts for building and enhancing tribal government for building program and institutional development. *Prerequisites: Must be familiar with computer and related word processing and spreadsheet programs.* (3+0)

TM F205 Advanced Tribal Finance Applications
3 Credits
Advanced tools and methods for the management and oversight of tribal government programs and organizations in rural Alaska. Student evaluation includes how well the student affects changes in tribal operations and tribal management. *Prerequisites: TM F105 and must be familiar with computer and related word processing and spreadsheet programs.* (3+0)

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TM F225 Cross Connections: Adapting and Integrating Principles of Management and Conservation
3 Credits
Skills, abilities and knowledge needed to adapt traditional Western science and management principles to indigenous resource concepts and values are crucial when dealing with contemporary natural resource, land and environmental management issues in rural Alaska. To prepare students and provide tools and methods for considering cross-cultural concepts and values in resource management and conservation decisions. (3+0)

TM F250 Current Topics in Tribal Government
1 Credit
Various topics of current interest to Tribal Governments and Tribal Management students. Topics announced prior to each offering and course may be repeated for credit. (1+0)

TM F271 Rural Transportation Planning
1 Credit Offered As Demand Warrants
Provides an introduction to the planning requirements of rural transportation programs, with emphasis on the Indian Reservation Roads (IRR) program. This course gives an overview of a transportation planning cycle, from grounding and visioning through plan development, implementation, evaluation and re-visioning. The planning elements that can be included under the IRR program regulations will be reviewed and discussed. Graded Pass/Fail. ***Prerequisites: TM F171; or permission of instructor.*** (1+0)

TM F272 Finance Applications for Rural Transportation
1 Credit Offered As Demand Warrants
Prepares students and provides financial tools and methods for the management and oversight of rural government transportation programs. Familiarity with rural transportation issues and basic finance applications recommended. ***Prerequisites: TM F171. Recommended: TM F105.*** (21+0)

TM F273 Transportation Improvement Programs and Control Schedules
1 Credit Offered As Demand Warrants
Provides students with the basic skills to develop a Transportation Improvement Program (Tribal TIP) and a supporting Control Schedule for rural transportation programs. The course will cover the process and minimum requirements for developing a TIP, how to develop the supporting control schedule and how to tie the control schedule to internal budget processes. Emphasis will be placed on meeting the requirements for the Indian Reservation Roads program. ***Prerequisites: TM F272.*** (17+0)

TM F274 Road Inventory Field Data System
1 Credit Offered As Demand Warrants
Introduction to the BIA Road Inventory Field Data System (RIFDS). Students will learn to navigate RIFDS and to enter, modify, and delete inventory data. The relationship between RIFDS, other databases, and fund allocation will be examined. Students may apply for RIFDS access upon completion of course. Graded Pass/Fail. ***Prerequisites: Basic computer literacy equivalent to CIOS F100 and familiarity with the BIA Indian Reservation Roads program or permission of the instructor.*** (1+0)

TM F276 Project Management for Rural Transportation
4 Credits Offered As Demand Warrants
Introductory course on project management, focusing on transportation projects in rural Alaska. Designed for individuals familiar with rural transportation programs but new to project management. ***Prerequisites: TM F170 or TM F171; TM F172; TM F173; TM F174 or permission of instructor.*** (4+0)

TM F299 Tribal Management Practicum II
3 Credits
Professional and personal development while working in a rural service organization. Emphasis on developing the understanding and skills necessary for delivery of rural services. Course is guided by an academic advisor. Student must be willing and able to work independently outside the classroom and in the community. ***Prerequisites: Must be familiar with computer and related word processing and spreadsheet programs.*** (3+0)

VETERINARY SCIENCE

VTS F101 Introduction to Veterinary Sciences
2 Credits Offered Fall.
Concepts of lifelong learning, research skills, techniques of observation, occupational and zoonotic safety, veterinary ethics, teamwork with sponsoring veterinarian/clinic, value of professional organizations, and animals and animal care in Alaskan culture. There also is a hands on veterinary science wet lab (physical examination, suturing, IV fluids, and splints). Graded Pass/Fail. (1.5+0+1.5)

VTS F110 Medical Terminology for Veterinary Sciences
3 Credits Offered Fall.
Medical and prescription terminology as related to veterinary sciences. Some native Alaskan cultural perspectives on medical terminology included. (3+0)

VTS F130 Animal Anatomy and Physiology for Veterinary Sciences
4 Credits Offered Spring.
Explores the anatomy of the dog, cat, avian, cattle, hog, sheep, goat, horse, reindeer, muskox, and bison. The anatomy is approached from a functional standpoint (body systems) and includes the physiology of each body system. In addition, Alaskan native terms for anatomical structures may be given. ***Prerequisites: VTS F101 prior to or concurrently; high school biology or equivalent; or instructor approval.*** (3+3)

VTS F140 Basic Animal Husbandry for Veterinary Sciences
3 Credits Offered Spring.
Animal restraint, behavior, handling, species and breed identification, humane animal care, housing, management of farm animals, sled dog management, and reproduction. Species covered are canine, feline, goat/sheep, pig, horse, cattle, bison, reindeer, muskox, some exotics and lab animals. ***Prerequisites: VTS F101 prior to or concurrent with; or instructor approval.*** (2.5+1.5)

VTS F150 Basic Animal Nutrition and Feeding for Veterinary Sciences
3 Credits Offered Spring.
Nutritional analysis of feed, soil sampling and nutritional requirements of domestic animals (cattle, hogs, sheep, goat, horse, reindeer, bison, muskox, cat, dog). Also discusses feeding techniques, storage of feeds, feed contamination analysis. ***Prerequisites: VTS F101; high school biology or equivalent; DEVM F105 or equivalent; or instructor approval.*** (3+0)

VTS F160 Animal Diseases for Veterinary Sciences
3 Credits
Discusses the infectious and noninfectious diseases and treatment of companion animals, domestic production animals (including reindeer, muskox and bison), exotic and lab animals. ***Prerequisites: VTS F101; VTS F110; VTS F130; or instructor approval.*** (3+0)

VTS F161 Introduction to Infectious Animal Diseases for Veterinary Science
3 Credits Offered Spring
Topics include general pathology, etiology, pathogenesis, epidemiology, management and general treatment options. Species covered are dog, cat, horse, cattle, pig, sheep, goat, bison and reindeer. ***Prerequisites: VTS F110; VTS F130 or instructor approval.*** (4+0)

VTS F170 Veterinary Office Management
3 Credits Offered Spring
Basic introduction of business practices as they pertain to the management of the veterinary office and the role of the veterinary technician in that management team. Concepts include communications skills, record keeping, use of computers in veterinary practice, inventory and office management, and related issues of law and ethics. ***Prerequisites: Permission of instructor.*** (4+0)

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VTS F199 Veterinary Sciences Certificate Practicum I
2 Credits
On site participation at an approved large or small animal veterinary clinic, veterinary research laboratory, or fish and wildlife disease research project. Graded Pass/Fail. ***Prerequisites: VTS F101; VTS F130; VTS F140; VTS F160; or instructor approval.*** (0+6)

VTS F210 Pharmacology for Veterinary Sciences
2 Credits Offered Fall.
Introduction to the basics of pharmacology as applied to the veterinary sciences. Topics include the properties of different drug classes and their uses. Dosage calculation, measurement and administration as well as veterinary pharmacy management will be addressed. Alaskan traditional pharmacology and indigenous ethno-veterinary botanical knowledge will also be discussed. ***Prerequisites: VTS F110; VTS F130; VTS F160; or permission of instructor.*** (3+0)

VTS F220 Principles of Imaging for Veterinary Sciences
2 Credits Offered Spring.
Principles of imaging as they pertain to the practice of veterinary technology. Fundamental understanding of equipment used in radiology (such as, film type, screens, development systems, x-ray machines), generation of x-rays, safety issues for both patients and operators, image formation, technique charts, artifacts, and darkroom techniques. Equipment maintenance and record keeping will also be addressed. ***Prerequisites: VTS F110; VTS F130; VTS F140; or permission of instructor.*** (3+0)

VTS F230 Theory of Veterinary Nursing Practice
3 Credits Offered Fall
Theory of practical aspects of nursing in a veterinary hospital such as taking patient history, obtaining and recording intake values, specimen collection, administration of medication, fluid therapy, and wound management. Nutrition of hospitalized patients, alternative and traditional nursing care topics will also be discussed. Both companion and large animal species will be addressed. The practical veterinary experience that leads to the expansion of student knowledge and builds proficiency of acquired skills through task specific exercises (i.e. patient restraint, patient assessment, patient therapeutics administration, husbandry, diagnostic specimen collection, fluid therapy, etc.) will occur during subsequent VTS courses, namely VTS F240 and VTS F299. ***Prerequisites: VTS F130; VTS F160; VTS F199; VTS F210; or permission of instructor.*** (4+0)

VTS F261 Introduction to Non-infectious Animal Diseases for Veterinary Sciences
3 Credits Offering Spring
A basic introduction to the study of non-infectious animal disease (e.g. endocrine, nutritional, immunologic, neoplastic, degenerative, developmental and genetics) for veterinary sciences. Basic pathologic mechanisms of diseases will be explored using common non-infectious animal disease examples. Species covered are cat, dog, horse, cattle, sheep, goat, pig, bison and reindeer. Topics: etiology, pathogenesis, management and general treatment options. ***Prerequisites: VTS F110; VTS F130; VTS F160 or permission of instructor.*** (3+0)

WELDING AND MATERIALS TECHNOLOGY

WMT F101 Introduction to Welding
4 Credits Offered As Demand Warrants
Introduction and orientation to the processes and procedures involved in the welding field including safe operational procedures for shielded metal arc welding (SMAW) (Stick), mixed inert gas (MIG), tungsten inert gas (TIG) and oxy-acetylene welding; in addition to the appropriate personal protective equipment (PPE) and terminology related to the welding industry. Special fees apply. (2+4)

WMT F102 Intermediate Welding
3 Credits
Continuation of WMT F101. ***Prerequisites: WMT F101.*** (2+2)

WMT F103 Welding I
3 Credits
Entry-level course in basic oxyacetylene, arc welding and flame cutting. Attendance at first two classes is mandatory. Special fees apply. (3+0)

WMT F105 Welding II
3 Credits
Arc welding techniques and basic MIG and TIG welding. Attendance at first two classes is mandatory. Special fees apply. ***Prerequisites: WMT F103 or permission of instructor.*** (3+0)

WMT F106 Heat Treating/Metal Finishing/Knife Making I
3 Credits
Heat treating, metal finishing. Build two knives, heat treat and finish. Special Conditions: Must have excellent hand-eye coordination. Attendance at first class is mandatory. Special fees apply. ***Recommended: WMT F117; WMT F241.*** (2+3)

WMT F116 Metal Forging
1-3 Credits
Metal forging brings back the old-school way of forming metal into useful hardware or tools. Students will use hand tools, forges, and anvils to fabricate various items out of metal. May be taken up to four times for a maximum of 6 credits. Attendance at first two classes is mandatory. Special fees apply. ***Recommended: WMT F103 or WMT F117.*** (1.5+5.5)

WMT F117 Oxy-Acetylene Welding and Cutting
3 Credits
Safe oxyacetylene welding techniques and procedures of common metals. Welding of these metals in flat, horizontal, vertical and overhead positions. Attendance at first two class meetings is mandatory. Special fees apply. (2+5)

WMT F130 Shielded Metal Arc Welding
1-3 Credits
All positions for multiple pass fillet welds. A maximum of 3 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. (1-3+0)

WMT F140 Metal Fabrication
1-3 Credits Offered As Demand Warrants
Metal fabrication done by hand and with the aid of equipment is the focus of this class. Plan, layout, bend, form raw metal and fabricate metal projects. May be repeated four times for a maximum of six credits. Attendance at first two classes is mandatory. Special fees apply. ***Prerequisites: WMT F103 or WMT F160 or WMT F241.*** (1.5+5.5)

WMT F150 Gas Tungsten Arc Welding
1-3 Credits
Use of tungsten and argon gas for aluminum and stainless steel gas welding (formerly called Heliarc or TIG. This is an entry level gas tungsten arc welding class concentrating on aluminum. Materials will be welded in all four welding positions. Special fees apply. (1.5+5.5)

WMT F160 Gas Metal Arc Welding
1-3 Credits Offered As Demand Warrants
Prepares student to work with wire-feed processes. Gas metal arc welding focuses on ferrous and nonferrous metals welded in all positions. Attendance at first two classes is mandatory. Special fees apply. (1.5+5.5)

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WMT F170 Military Training Welding I
3 Credits
Entry-level oxyacetylene welding, cutting, soldering and brazing. Conforms to special training standards labeled 3E3X1. Uses parts of CDC 55250A volume #5 as a guide. Special fees apply. ***Prerequisites: Permission of instructor.*** (2+4.5)

WMT F206 Heat Treating/Metal Finishing/Knife Making II
3 Credits
Second level of knife making and heat treating using more complex metals and additional equipment. Must have excellent hand-eye coordination. Attendance at first class is mandatory. Special fees apply. ***Recommended: WMT F106; WMT F117; WMT F241.*** (2+2)

WMT F210 Pipe Welding
3 Credits
Prepare and weld pipe in an uphill or downhill position. Special fees apply. ***Prerequisites: Permission of instructor.*** (2+3.5)

WMT F241 Gas Tungsten Arc and Gas Metal Arc Welding
3 Credits
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. Attendance at first two class meetings is mandatory. Special fees apply. (1.5+5.5)

WMT F270 Military Training Welding II
3 Credits
Conforms to special training standards parts 1 - 4 of CDC 55250A volume #6. Special fees apply. ***Prerequisites: WMT F170 or permission of instructor.*** (2+4.5)

WMT F280 Military Training Welding III
3 Credits
Intermediate TIG and MIG welding. Fabrication with aluminum and steel. Real world situations and conditions are simulated. Special fees apply. ***Prerequisites: WMT F170; WMT F270; or permission of instructor.*** (2+4.5)

WMT F290 Welding Proficiency Maintenance
3 Credits
Maintenance of a high degree of welding proficiency through practice of previously-learned processes. Review of safety procedures. Special fees apply. ***Prerequisites: WMT F170; WMT F270; WMT F280; or permission of instructor.*** (2+4.5)

WILDLIFE

WLF F101 Survey of Wildlife Science
1.5 Credits Offered Fall
An introduction to wildlife biology for conservation and management. Lectures will describe the research of local wildlife biologists and the programs of management agencies. Weekend field trips will be used to introduce practical problems and approaches in wildlife science. (1+0+1.5)

WLF F222 Principles and Techniques of Wildlife Management
3 Credits Offered Spring
This course applies ecology to the study and management of animals and their habitats. We will discuss management for consumptive and non- consumptive uses of birds, mammals, reptiles and amphibians. ***Prerequisites: BIOL F271; WLF F101; NRM F101; ENGL 111X.*** (2+3)

WLF F301 Design of Wildlife Studies
3 Credits Offered Spring terms.
Design of wildlife studies. Study designs for wildlife populations and their habitats. Probability theory, finite population sampling, capture-mark-recapture sampling and research design will be examined through lectures, labs and a term project. ***Prerequisites: WLF F101, WLF F201, MATH F107X or MATH F161X, or permission of the instructor. Recommended: STAT F200 or F300.*** (2+3)

WLF F303 W Wildlife Management Techniques
3 Credits Offered Fall
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. ***Prerequisites: BIOL F271; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; WLF F201 or equivalent.*** (2+3)

WLF F304 Wildlife Internships
1-3 Credits
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. ***Prerequisites: Permission of instructor.*** (1-3+0)

WLF F305 Wildlife Diseases
3 Credits Offered Spring Odd-numbered Years
Basic concepts of parasitic, infectious, environmental and nutritional diseases. Specific study of Alaska wildlife diseases. Basic necropsy technique and chemical immobilization. ***Prerequisites: BIOL F115X and BIOL F116X or equivalent; or permission of instructor. Recommended: BIOL F310; BIOL F317.*** (2+3)

WLF F410 Wildlife Populations and Their Management
3 Credits Offered Fall
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. ***Prerequisites: BIOL F271; calculus course; introductory STAT course; WLF F303 or BIOL F471.*** (2+3)

WLF F419 O Ecology and Management of Birds
3 Credits Offered Spring Odd-numbered Years
Ecology of avian populations with a focus on harvest and habitat management for North American birds. Distributions, life-history, population dynamics, and monitoring and research techniques will be considered. Special fees apply. ***Prerequisites: BIOL F271; COMM F131X or COMM F141X; WLF F222; or permission of instructor.*** (3+0)

WLF F421 Ecology and Management of Large Mammals
3 Credits Offered Fall Even-numbered Years
Identification, taxonomy, distribution, life history and ecology of North American large mammals. Exploration of roles of reproduction, predation, nutrition, habitat alteration and competition in population dynamics of large mammals, and management practices designed for conservation of habitats and populations. ***Prerequisites: BIOL F271; WLF F201 or permission of instructor. Recommended: WLF F303.*** (3+0)

WLF F425 O Ecology and Management of Birds
3 Credits Offered Spring Odd-numbered Years
Ecology of avian populations with a focus on harvest and habitat management for North American birds. Distributions, life-history, population dynamics, and monitoring and research techniques will be considered. ***Prerequisites: BIOL F271; COMM F131X or COMM F141X; WLF F222; or permission of instructor.*** (3+0)

WLF F431 Wildlife Law and Policy
3 Credits Offered As Demand Warrants
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. ***Prerequisites: WLF F201 or permission of instructor.*** Cross-listed with NRM F431. (3+0)

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WLF F433 **Conservation Genetics**
3 Credits Offered Spring
Concepts of population genetics, phylogenetics, pedigree analysis, systematics and taxonomy as they apply to conservation of species. Evaluating the impact of small population size, population fragmentation, inbreeding, hybridization, taxonomic uncertainties and other factors on viability and management of species. ***Prerequisites: BIOL F271 and BIOL F362 or equivalents; or permission of instructor. Recommended: BIOL/NRM F277.*** Cross-listed with BIOL F433. Stacked with BIOL F633; WLF F633. (3+0)

WLF F458 **Vertebrate Endocrinology**
3 Credits Offered Fall Odd-numbered Years
Introduction to the mechanisms of action and the roles of the main hormonal systems that operate in vertebrates. Hormone effects at the organ, tissue, and (sub)cellular levels. Hormonal control of homeostasis and of specific behaviors. Examples to be taken mostly from recent comparative studies. ***Prerequisites: BIOL F310 or permission of instructor.*** Cross-listed with BIOL F458. (3+0)

WLF F460 O/2 **Wildlife Nutrition**
4 Credits Offered Fall
The energy nutrient requirements of vertebrate animals in relation to the ecology, physiology and life history. Concepts and techniques used by wildlife biologists 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: COMM F131X or COMM F141X; BIOL F271; BIOL F310; or permission of instructor.*** Cross-listed with BIOL F459. Stacked with BIOL F659; WLF F660. (3+3)

WLF F469 O **Landscape Ecology and Wildlife Habitat**
3 Credits Offered Spring
A problem-based learning and critical thinking approach to modern methods in landscape ecology, including geographic information systems, remote sensing, modeling, software, and the Internet. Graduate students are expected to help undergraduates with problems and questions. Special fees apply. ***Prerequisites: BIOL F271 or equivalent; COMM F131X or COMM F141X.*** Cross-listed with BIOL F469. Stacked with BIOL F669; WLF F669. (2+3)

WLF F485 **Global Change Biology**
3 Credits Offered Fall Odd-numbered Years
Contemporary science and policy concerns of global change that involve biological processes. Includes structural and functional responses and sensitivities of biological processes to environmental changes (such as climate and human uses of land and biological resources); implications of biological responses to global change for conservation and management of biological resources; and the social and economic consequences of biological responses to global change. ***Prerequisites: BIOL F271; CHEM F105X; CHEM F106X.*** Cross-listed with BIOL F485. (3+0)

WLF F602 **Research Design**
3 Credits Offered Fall
An introduction to the philosophy, performance and evaluation of hypothetical/deductive research in the biological sciences, with emphasis on hypothesis formulation and testing. Each student will develop a research proposal. ***Prerequisite: Graduate standing or permission of instructor.*** Cross-listed with BIOL F602. (3+0)

WLF F603 **Biotelemetry**
3 Credits Offered Fall Even-numbered Years
An introduction to the basics of radio and ultrasonic telemetry and their application to the study of the ecology, behavior and physiology of vertebrates in terrestrial freshwater and marine environments. Review of concepts, equipment demonstration and a class project to expose students to an important tool for biological fisheries and wildlife investigations. ***Prerequisites: Graduate standing; or senior with instructor approval.*** (2+3)

WLF F604 **Scientific Writing, Editing and Revising in the Biological Sciences**
3 Credits Offered Spring
For students who are ready to produce a manuscript or thesis chapter. Topics include the publishing process (e.g., the role of editors and reviewers), preparing to write (selecting a journal, authorship), the components of the scientific paper, revising and editing manuscripts, and responding to reviews. Students will produce a complete manuscript. ***Prerequisites: Graduate standing in Biology, Wildlife, or related discipline and permission of instructor. Cross-listed with BIOL F604.*** (3+0)

WLF F614 **Foraging Ecology**
2 Credits Offered Fall Even-numbered Years
The dynamics of herbivory, emphasizing the foraging process and including mechanisms of feeding, feeding behavior, habitat and plant selection, physiological influences on feeding, plant and community level responses, plant defenses against herbivory and management of plant-herbivore systems. ***Prerequisites: Graduate standing or approval of instructor.*** Cross-listed with BIOL F614. (2+0)

WLF F622 **Current Issues in Conservation Biology**
3 Credits Offered Spring Odd-numbered Years
Critical discussion of contemporary issues concerning extinction patterns, population viability and the preservation, design and management of habitats for populations/species of concern. Stresses integration of principles and policies into strategies for biological conservation. ***Prerequisites: BIOL F471 or WLF F410; graduate standing; or permission of instructor.*** Cross-listed with BIOL F622. (3+0)

WLF F625 **Population Dynamics of Vertebrates**
4 Credits Offered Spring Odd-numbered Years
Sampling vertebrate populations, modeling their population dynamics and the implications for management. Focus will be on study design, model assumptions, estimation of population parameters, and population projections. State-of-the-art computer applications will be employed in laboratory exercises of actual and simulated data. ***Prerequisites: BIOL F271; STAT F401.*** Cross-listed with FISH F625. (3+3)

WLF F633 **Conservation Genetics**
4 Credits Offered Spring
Concepts of population genetics, phylogenetics, pedigree analysis, systematics and taxonomy as they apply to conservation of species. Evaluating the impact of small population size, population fragmentation, inbreeding, hybridization, taxonomic uncertainties and other factors on viability and management of species. ***Prerequisites: BIOL F271 and BIOL F362 or equivalents or permission of instructor. Recommended: BIOL/NRM F277.*** Cross-listed with BIOL F633. Stacked with BIOL F433; WLF F433. (3+3)

WLF F660 **Wildlife Nutrition**
4 Credits Offered Fall
The energy nutrient requirements of vertebrate animals in relation to their ecology, physiology and life history. Concepts and techniques used by wildlife biologists 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. Special fees apply. ***Prerequisites: BIOL F271; BIOL F310; graduate standing; or permission of instructor.*** Cross-listed with BIOL F659. Stacked with BIOL F459; WLF F460. (3+3)

WLF F669 **Landscape Ecology and Wildlife Habitat**
3 Credits Offered Spring
A problem-based learning and critical thinking approach to modern methods in landscape ecology, including geographic information systems, remote sensing, modeling, software, and the Internet. Graduate students are expected to help undergraduates with problems and questions. Special fees apply. ***Prerequisites: Graduate standing.*** Cross-listed with BIOL F669. Stacked with BIOL F469; WLF F469. (2+3)

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WLF F680 **Data Analysis in Biology**
3 Credits Offered Fall Even-numbered Years
Biological applications of nonparametric statistics, including tests based on binomial and Poisson distributions, analysis of two-way and multiway contingency tables, and tests based on ranks; multivariate statistics, including principal component analysis, ordination techniques, cluster and discriminate analysis; and time-series analyses. Introduction to the use of the computer and use of statistical packages. Each student will analyze a data set appropriate to the student's research interests. ***Prerequisites: STAT F200X, STAT F401; graduate standing in a biologically oriented field; or permission of instructor.*** Cross-listed with BIOL F680. (2+3)

WLF F692 **Graduate Seminar**
1-6 Credits
Topics in fish and wildlife management explored through readings, talks, group discussions and guest speakers with a high level of student participation. Graded Pass/Fail. ***Prerequisites: Graduate standing or permission of instructor.*** (0+0+1-6)

WOMEN'S AND GENDER STUDIES

WGS F201 **Introduction to Women's and Gender Studies** (s)
3 Credits
An interdisciplinary introduction to the field of women's and gender studies, exploring its development, subject matter and methodologies. Readings from studies that have become classic examples of the importance of gender in research in many disciplines are examined. Also available via Independent Learning. (3+0)

WGS F202 **History of Women in America** (s)
3 Credits Offered Fall Odd-numbered Years
A chronological approach to the history of women in America. Introduction to major issues of concern to historians of women, as well as different approaches used in analysis of women's past. Consideration of multiracial backgrounds of American women. Cross-listed with HIST F202. (3+0)

WGS F308 W,O **Language and Gender** (s)
3 Credits Offered Fall Odd-numbered Years
Examination of relationships between language and gender, drawing on both ethnographic and linguistic sources. Topics include power, socialization and sexism. ***Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.*** Cross-listed with ANTH F308; LING F308. (3+0)

WGS F320 **Sociology of Gender** (s)
3 Credits
Comprehensive survey of sociological inquiry and feminist revisions for studying gender in U.S. society and culture. Interrogates the meanings of gender, and the interactional, cultural, organizational and institutional arrangements that underlie the social construction of gender and gender inequality. ***Prerequisites: One lower-division social science course, WGS F201, or permission of instructor.*** Cross-listed with SOC F320. (3+0)

WGS F325 **The History of Sexuality** (s)
3 Credits Offered Summer
The history of sexuality from a worldwide comparative perspective. Theories and debates about the history of sexuality in selected times and places, with an emphasis on the modern period. ***Prerequisites: HIST F100X; ENGL F211X or ENGL F213X.*** Cross-listed with HIST F325. (3+0)

WGS F331 W **Women's Voices in Japanese Literature** (h)
3 Credits
Selected novels, short stories, poems and diaries by Japanese women from the tenth century to the present which reveal the personal, social, aesthetic and intellectual concerns of women in different periods of Japanese history. Focus on the changing role of women in Japanese society, the role of women writers as social critics, and cross-cultural differences and similarities in women's issues. ***Prerequisites: ENGL F111X; ENGL F211X or F213X or permission of instructor; ENGL/FL F200X. Recommended: HIST F121, F122 or F331 recommended.*** Cross-listed with JPN F331. (3+0)

WGS F332 **Human Sexualities Across Cultures** (s)
3 Credits Offered Alternate Fall Odd-numbered Years
Exploration of how people in a variety of cultures, both contemporary and historical, construct the meaning and experience of sexuality and express themselves as sexual beings. Interdisciplinary study includes psychology, sociology, anthropology, gender studies and related fields, with particular focus determined by which department is offering the course. Also available via Independent Learning. ***Prerequisites: SOC F100X or SOC F201 or PSY F101 or WGS F201 or permission of instructor.*** Cross-listed with PSY F333; SOC F333. (3+0)

WGS F333 **Women's Literature** (h)
3 Credits Offered Fall
Reading, discussing and analyzing literary works dealing with the social, cultural and political implications of patriarchal structures and traditions from the perspective of feminist theory and criticism. Focus may be on a particular theme, period or genre, but readings will include both primary and secondary texts. ***Prerequisites: ENGL F111X. Recommended: ENGL F211X.*** Cross-listed with ENGL F333. (3+0)

WGS F335 W **Gender and Crime**
3 Credits Offered Spring
An exploration of gender and crime including the extent of female crime, victimization, masculinities and violence, and women professionals in the justice system. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; JUST F110; junior standing.*** Cross-listed with JUST F335. (3+0)

WGS F340 **Women and Politics** (s)
3 Credits Offered Spring Odd-numbered Years
In-depth examination of the relevance of gender in political thought and action. Topics vary and may include: an historical perspective of political ideas on the nature and status of women; women's involvement in national and/or international political movements and organizations; feminist approaches to the social sciences; feminism as a political ideology. ***Prerequisites: One political science course or permission of instructor. Recommended: WGS F201.*** Cross-listed with PS F340. (3+0)

WGS F348 W **Native North American Women** (s)
3 Credits Offered As Demand Warrants
Interdisciplinary examination of the relationship between Native American women and their social settings and cross-cultural experiences. Includes issues of political, economic and social solutions as employed by women in a large multi-ethnic nation-state. ***Prerequisites: ANS F101; ANTH F100X; ENGL F111X; ENGL F211X or ENGL F213X; SOC F100X; or permission of instructor.*** Cross-listed with ANS F348. (3+0)

WGS F350 W **Women's Issues in Social Welfare and Social Work Practice** (s)
3 Credits
Examination of theories and research concerning women's issues in the field of social work and in the social welfare system, with particular emphasis on women in poverty and women of color. Contemporary policy issues and strategies of empowerment will be covered. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; SWK F103 or SOC F100X; or permission of instructor.*** Cross-listed with SWK F350. (3+0)

WGS F351 **Gender and Communication** (s)
3 Credits Offered Fall
Basic socialization differences exist in the communication practices of women and men in every culture, resulting in differing cultural constructions of male and female gender. Those differences are addressed in interpersonal, organizational and cultural contexts. Explores cultural female/male dichotomy as

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well as individual similarities. ***Prerequisites: Any lower-division communication course or permission of instructor.*** Cross-listed with COMM F351. (3+0)

WGS F360 O **Psychology of Women Across Cultures** (s)
3 Credits Offered Spring Odd-numbered Years.
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. ***Prerequisites: COMM F131X or COMM F141X; PSY F101; or permission of instructor.*** Cross-listed with PSY F360. (3+0)

WGS F362 **Feminist Philosophy** (h)
3 Credits Offered As Demand Warrants
Examination of contemporary feminist philosophical positions. Emphasis on feminist ethics, social and political philosophy, and epistemology. Cross-listed with PHIL F362. (3+0)

WGS F380 O **Women, Minorities and the Media** (h)
3 Credits Offered Fall
Examination of how women and minorities are portrayed in the mass media, the employment of women and minorities in the media, and how accurately the media reflects our society demographically. Presented from a feminist, multi-culturalist perspective using a broad feminist analysis encompassing issues of gender as well as class, race, age and sexual orientation. ***Prerequisites: COMM F131X or COMM F141X; junior standing.*** Cross-listed with JRN F380. (3+0)

WGS F403 **Theories in Women's and Gender Studies**
3 Credits Offered Fall Odd-numbered Years
This class will explore the intellectual history of women's and gender studies. We will start our exploration in the late 18th century, and follow feminist theoretical ideas about women and gender through to the present. Although we will mostly focus on western theoretical work, we will also delve into non-western ideas, especially as these critique western ideas about women and gender. ***Prerequisites: WGS F201 or permission of instructor.*** (3+0)

WGS F410 W **Women in Music History** (h)
3 Credits
Lives and works of female musicians, composers and performers will be traced from the earliest days of the ancient and mythological through the medieval, Baroque Classical, and Romantic periods with special emphasis on composers of the 20th century. ***Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; junior standing or permission of instructor.*** Cross-listed with: MUS F410. (3+0)

WGS F414 **Women and Gender in East Asian History** (s)
3 Credits Offered As Demand Warrants
Seminar on the history of East Asia with special emphasis on the experiences of women and the issue of gender. This seminar will focus on the modern period and on China and Japan especially, though other regions of East Asia may also be considered. ***Prerequisites: HIST F100X; ENGL F211X or ENGL F213X; or permission of instructor. Recommended: HIST F122 and/or HIST F275.*** Cross-listed with HIST F414. (3+0)

WGS F424 **Topics in Women's History** (s)
3 Credits Offered As Demand Warrants
An in-depth seminar on a specific topic of current interest. Topics may change and may cover the history of European or American women from the 18th century to the present. Course may be repeated for credit when content varies. ***Prerequisites: A lower-division history course; junior standing; or permission of instructor.*** Cross-listed with HIST F424. (3+0)

WGS F440 **Gender and Education** (s)
3 Credits Offered Alternate Spring Even-numbered Years
Educational practices and processes and their relation to the changing situation of women in society. Examination of schools as sites of pervasive gender socialization and discrimination as well as offering new possibilities for liberation. Topics include social construction of gender; patterns of access and achievements; gender as an organizing principle in schools and classrooms; and feminist agendas and strategies for change. ***Prerequisites: Junior standing or permission of instructor.*** Cross-listed with ED F440. Stacked with ED F640. (3+0)

WGS F445 **Gender in Cross-Cultural Perspective** (s)
3 Credits Offered Spring Even-numbered Years
Gender as cultural construction and social relationship is examined through readings in comparative ethnographies portraying gender roles in a broad variety of societies, from hunter-gatherer to industrial. New theoretical and methodological approaches in anthropology for exploring and understanding women's and men's experiences in their cultural variety are presented. ***Prerequisites: ANTH F215 or WGS F201 or permission of instructor.*** Cross-listed with ANTH F445. Stacked with ANTH F645. (3+0)

WGS F460 **Women and Development** (s)
3 Credits
Explores interrelationships over time of women, gender roles and development in the dynamic global economy, including issues in Alaska and the circumpolar north. Examines the historical marginalization of women in developmental processes, special issues affecting women in indigenous communities, and changing socio-economic and cultural gender roles of women and men in community development. Examines life histories of women that illustrate emerging principles and strategies for individual and community empowerment. Cross-listed with RD F460. (3+0)

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The date following each name designates the time of original appointment to university faculty. (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
AKCFWRU	Alaska Cooperative Fish and Wildlife Research Unit
ANLC	Alaska Native Language Center
ARSC	Arctic Region Supercomputing Center
BBC	Bristol Bay Campus
CANHR	Center for Alaska Native Health Research
CC	Chukchi Campus
CDE	Center for Distance Education
CEM	College of Engineering and Mines
CES	Cooperative Extension Service
CGC	Center for Global Change and Arctic System Research
CHANC	Chancellor's Office
CIFAR	Cooperative Institute for Arctic Research
CLA	College of Liberal Arts
CNSM	College of Natural Science and Mathematics
CTC	Community and Technical College
CRCD	College of Rural and Community Development
CRS	Center for Research Services
DANSRD	Department of Alaska Native Studies and Rural Development
ESTES	Engineering, Science and Technology Experiment Station
FITC	Fishery Industrial Technology Center
FS	Facilities Services
GI	Geophysical Institute
GRAD	Graduate School
GURU	Global Undersea Research Unit
IAB	Institute of Arctic Biology
IAC	Interior-Aleutians Campus
IARC	International Arctic Research Center
IMS	Institute of Marine Science
INE	Institute of Northern Engineering
JC	Juneau Center
KUC	Kuskokwim Campus
LIB	Elmer E. Rasmuson Library
MAP	Marine Advisory Program
MUSEUM	University of Alaska Museum of the North
NWC	Northwest Campus
OIT	Office of Information Technology
PROV	Provost's Office
SFOS	School of Fisheries and Ocean Sciences
SNRAS	School of Natural Resources and Agricultural Sciences
SOE	School of Education
SOM	School of Management
SS	Student Services
UADV	University Advancement
VCAS	Vice Chancellor for Administrative Services
WCPR	West Coast and Polar Regions Undersea Research Center
WERC	Water and Environmental Research Center

Abramowicz, Kenneth F—1994—Associate Professor of Accounting (2001), SOM. University of Tulsa '82, BA; '83, MS; University of Missouri Columbia '91, PhD.

Adkison, Milo D.—1996—Professor of Fisheries (2010), SFOS. University of California, Davis '84, BS; Montana State University, Bozeman '89, MS; University of Washington '94, PhD.

Aguilar-Islas, Ana Maria—2007—Assistant Professor of Oceanography (2010), SFOS. University of California, Santa Cruz '07, PhD.

Ahmadi, Mohabbat—2011—Assistant Professor (2011), CEM. Petroleum University of Technology, Ahwaz, Iran '00, BS; '03, MS; University of Texas at Austin '10, PhD.

Ahmed Kamel, Ahmed H—2011—Assistant Professor of Petroleum Engineering (2011), CEM. Al Azhar University at Cairo, Egypt '95, BSc; '00, MSc; University of Oklahoma '08, PhD.

Albertson, Leif E—2008—Assistant Professor of Extension (2008), CES; Health, Home and Family Development Agent, Yukon Kuskokwim District, CES. University of California, Berkeley '01, BA; Harvard University '06, MS.

Alexander, Kevin Wayne—2004—Assistant Professor of Airframe and Power Plant Maintenance (2007), CTC/CRCD. University of Alaska Fairbanks '96, Certificate; '05, AAS.

Alexeev, Vladimir—2002—Research Associate Professor (2002), IARC. Moscow Institute for Physics and Technology '84, MS; '88, PhD.

Alexie, Oscar F—1983—Assistant Professor (2006), KUC/CRCD. University of Alaska Fairbanks '04, BA.

Alexie, Sophie Ann—1983—Instructor of Yup'ik Eskimo (1994), KUC/CRCD. Kuskokwim Community College, AA; University of Alaska Fairbanks '78, AA; University of Alaska Fairbanks '83, BEd.

Alis, Russell D.—2005—Assistant Professor of Airframe and Power Plant Maintenance (2008), CTC/CRCD.

Allen, James R—1996—Professor of Psychology (2003), CLA. University of Wisconsin '81, BA; University of Montana '88, MA; '90, PhD.

Allen, Jane B—1986—Term Assistant Professor of Mathematics (1998), KUC/CRCD. Indiana University '72, BA; '75, MS.

Allman, Elizabeth S—2005—Associate Professor of Mathematics (2005), CNSM. Yale University '87, BA; University of California, Los Angeles '92, MA; '95, PhD.

Anahita, Jensine Martha—2003—Associate Professor of Sociology (2008), CLA. Iowa State University '97, BS; '00, MS; '03, PhD.

Anderl, Robert G.—1990—Instructor of Library Science (1995), CDE/CRCD. Syracuse University '62, BA; '65, MS; University of Tulsa '86, Certificate.

Anderson, Clara R.—1983—Director, Interior Aleutians Campus (1991), IAC/CRCD. University of Alaska Fairbanks '69, BA; Portland State University '73, MSW.

Anderson, Jodie Marie—2003—Instructor (2007), SNRAS; Director, AK Community Horticulture Program, AFES. University of North Carolina at Chapel Hill '92, BS; Brown University '94, MA.

Andrecheck, Cynthia R—2007—Instructor (2009), KUC/CRCD.

Andrews, Russel Don—2002—Research Assistant Professor (2002), IMS/SFOS. University of California, Los Angeles '90, BS; University of British Columbia, Vancouver '99, PhD.

Andrews, Susan B.—1983—Professor of General Studies (2001), CC/CRCD; Professor of Journalism, CLA. Smith College '81, BA; University of Oregon '83, MA.

Anger, Andreas Paul Wilhelm—1994—Associate Professor (2008), CTC/CRCD. University of Nebraska '90, MBA; University of Bayreuth, Germany '91, Diplom Kaufmann.

Aoki, Miho—2001—Associate Professor of Computer Art (2007), CLA; Joint Faculty (2001), ARSC. Aichi University, Japan '91, BEd; Ohio State University '98, MFA.

Arendt, Anthony Alan—2000—Research Assistant Professor (2008), GI. University of Alaska Fairbanks '06, PhD.

Armbruster, William Scott—1980—Research Professor (1999), IAB. University of California, Santa Barbara '72, BA; University of California, Davis '77, MS; '81, PhD.

Armstrong, Anne Brenner—2004—Assistant Professor of Education (2007), SOE. University of Alaska Fairbanks '74, BA; '74, BEd; '92, MEd.

Arthur, Melanie Marie—2007—Assistant Professor (2007), CLA. Rice University '92, BA; Johns Hopkins University '01, PhD.

Aschwanden, Andreas—2009—Postdoctoral Fellow (2009), ARSC.

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Ashdown, Brien K—2009—Assistant Professor of Pschology (2009), CLA. Weber State University '03, BA; Saint Louis University '06, MS; '09, PhD.

Atkinson, Judith Ann—1996—Associate Professor of Developmental Mathematics (2009), CRCD. Eastern Kentucky University '88, BS; University of Alaska Fairbanks '93, MS; '02, PhD.

Atkinson, Shannon Kathleen—2000—Professor of Marine Science (2000), JC/SFOS. University of Hawai'i Manoa '78, BS; '81, MS; Murdoch University '85, PhD.

Avdonin, Sergei Anatolievich—2001—Professor of Mathematics (2001), CNSM. St. Petersburg State University '72, BS; '77, PhD.

Ayagarak, Nancy Hart—1989—Instructor (1989), KUC/CRCD. University of Washington, BA; Western Oregon University '83, MS.

Bacsujlaky, Mara C—1998—Term Instructor of Extension (2007), CES. University of Pennsylvania '86, BA.

Baek, Jungho—2009—Assistant Professor of Economics (2009), SOM. Hanyang University '91, BA; Korea University '93, MA; Michigan State University '04, MA; '04, PhD.

Bailey, Joellen Diane—1997—Instructor of Computer Information and Office Systems, CDE (2000), IAC/CRCD. Emory University '91, BA.

Bailey, John Eric—2005—Research Assistant Professor (2010), SNRAS/AFES. University of Kent at Canterbury '97; University of Hawai'i Manoa '01, MS; '05, PhD.

Baker, Carrie Crosby—2005—Assistant Professor (2005), CLA. Middlebury College '96, BA; University of California, Irvine '02, MFA.

Baker, Victoria Nan—2003—Associate Professor (2010), MAP/SFOS. University of Washington '81, BA; University of Alaska Anchorage '02, MEd.

Bandopadhyay, Sukumar—1982—Professor of Mining Engineering (1992), CEM. Banavas Hindu University '75, BS; Banavas Hindu University '75, MTech; Pennsylvania State University '79, MS; '82, PhD.

Barber, Valerie A—1990—Assistant Professor of Forest Sciences, Director of UAF Forest Products (2004), SNRAS. Florida Institute of Technology '78, BS; University of Alaska Fairbanks '95, MS; '02, PhD.

Barboza, Peregrine Stephen—1997—Professor of Biology (2002), CNSM. University of South Wales, Kensington '83, BSc; University of New England, Armidale, Australia '91, PhD.

Bargar, Harold Edward—1990—Assistant Professor of Mechanical Engineering (2003), CEM. University of Nebraska '77, BS; University of Alaska Fairbanks '96, MS; '03, PhD.

Barnes, Brian M.—1986—Director (2002), IAB; Professor of Biology and Wildlife (1991), CNSM. University of California, Riverside '77, BS; University of Washington '83, PhD. P.E.

Barnes, David L—1999—Associate Professor of Civil and Environmental Engineering (2004), CEM. New Mexico State University '85, BS; '87, MS; Colorado State University '97, PhD. P.E.

Barnes, William Carroll—1983—Assistant Professor of Computer and Information Sciences (2009), CTC/CRCD. State University of New York at Buffalo '71, BA; Nova Southeastern University '02, MS.

Barnhardt, Carol A.—1980—Associate Professor of Education (2002), SOE. North Dakota State University '65, BS; University of Alaska Fairbanks '81, MA; University of British Columbia '94, PhD.

Barnhardt, Raymond J.—1970—Professor of Cross Cultural Studies (1980), CLA; Director, Center for Cross Cultural Studies, CLA. North Dakota State University '65, BS; Johns Hopkins University '67, MEd; University of Oregon '70, PhD.

Barnsley, Amy Elizabeth—2004—Assistant Professor of Developmental Mathematics (2008), CRCD. University of Alaska Fairbanks '93, BS; '07, MAT.

Barrick, Kenneth A.—1985—Associate Professor of Geography (1992), SNRAS. Shippenburg University of Pennsylvania '74, BA; Southern Illinois University Carbondale '82, MS; '83, PhD.

Barry, Ronald P—1991—Professor of Statistics (1997), CNSM. University of Alaska Anchorage '84, AA; University of Alaska Fairbanks '85, BS; '87, MS; University of California, Irvine '91, PhD.

Bartlett, Christa Lynn—2000—Assistant Professor of Medical Assisting (2003), CTC/CRCD. University of Alaska Fairbanks '04, AAS.

Becker, Steven Russell—1991—Term Assistant Professor of Tribal Management (2007), IAC/CRCD. University of Alaska Fairbanks '95, BS; '09, MA.

Begét, James E.—1984—Professor of Geology (1996), CNSM. Columbia University '74, BA; University of Washington '77, MS; '81, PhD.

Bell, Scott—2010— Associate Vice Chancellor for Facilities Services (2010), FS. University of Alaska Fairbanks '82, BS.

Berge, Anna Mary Sophia—2001—Associate Professor (2007), CLA. University of Wisconsin Madison '88, BA; University of California, Berkeley '91, MA; '92, MLIS; '97, PhD.

Berry, Kevin T—2006—Associate Professor of Accounting (2006), SOM; Associate Dean (2008), SOM. Bradley University '89, BS; University of Missouri Columbia '90, MAcc; Oklahoma State University '95, PhD.

Bersamin, Andrea—2003—Assistant Professor (2008), CNSM. University of California, Berkeley '99, BA; University of California, Davis '06, PhD.

Bhatt, Uma S.—1998—Associate Professor of Atmospheric Sciences (2004), CNSM. University of Pittsburgh '83, BA; '83, BSE; University of Wisconsin '89, MS; '96, PhD.

Bicigo, James M—1998—Associate Professor of Music (2004), CLA. University of Michigan '88, BM; Western Michigan University '93, MA; Michigan State University '98.

Bickmeier, Donald Allen—2007—Term Assistant Professor of Process Technology (2007), CTC/CRCD. Illinois State University '69, BS; Iowa State University '74, MS.

Blake, John E.—1988—Associate Vice Chancellor for Research (2007), CRS; Director of Research Integrity (2001), CRS. University of Saskatchewan '80, DVM; '87, MVetSc.

Blanchard, Arny L.—1986—Research Assistant Professor (1996), IMS/SFOS. University of Alaska Fairbanks '89, BS; '99, MS; '06, PhD.

Bluhm, Bodil A—2002—Research Assistant Professor of Marine Science (2002), IMS/SFOS. Kiel University '97, MS; Bremen University '00, PhD.

Blurton, David Myers—1989—Professor of Justice (2006), CLA; Department Chair, CLA. Humboldt State University '75, BS; University of Montana '85, JD.

Bogosyan, Seta—2002—Professor of Electrical and Computer Engineering (2009), CEM. Istanbul Technical University '81, BS; '84, MS; '91, PhD.

Bolton, William R.—1998—Postdoctoral Fellow (2009), ARSC. University of Alaska Fairbanks '96, MS; '06, PhD.

Boone, Richard D.—1995—Professor of Biology (2008), CNSM. Oberlin College '77, ABA; Oregon State University '82, MS; University of Massachusetts, Amherst '89, PhD.

Booth, Amanda Lynn—2006—Postdoctoral Fellow (2006), CEM.

Borgeson, Cory R.—1986—Term Instructor of Business Administration (1999), SOM. Oakland University '78, BA; Drake University School of Law '81, JD.

Boyer, Bert B—1992—Professor of Molecular Biology (2008), CNSM. Texas Tech University '82, BA; Lousiana State University Medical Center '88, PhD.

Brashear, James J—1992—Professor of Art (2009), CLA. Indiana University of Pennsylvania '87, BFA; Louisiana State University '90, MFA.

Brayboy, Bryan McKinley—2007—President's Term Professor (2009), SOE. University of North Carolina '90, BA; Trinity College '93, MAT; University of Pennsylvania '95, MS; '99, PhD.

Breen, Amy Lynn—2000—Postdoctoral Fellow (2010), CNSM; Adjunct Professor of Biology (2011), SNRAS. College of the Atlantic '94, BA; University of Missouri Columbia '00, MS; University of Alaska Fairbanks '10, PhD.

Bret Harte, Marion Syndonia—1998—Associate Professor of Plant Biology (2008), CNSM. Reed College '83, BA; Stanford University '90, PhD.

Brewer, Reid Sinclair—1999—Associate Professor (2010), MAP/SFOS. United States Military Academy '95, BS; University of Alaska Fairbanks '03, MS.

Bridwell, Gara Deanne—1995—Term Assistant Professor, CTC.

Brigham, Lawson W—2009—Distinguished Professor of Geography (2009), SNRAS/AFES. U.S. Coast Guard Academy '70, BS; Rensselaer Polytechnic Institute '79, MS; United States Naval War College '82, Diploma; University of Cambridge '96, MPhil; University of Cambridge '00, PhD.

Brightwell, Geraldine Anne—2004—Associate Professor (2008), CLA. Bristol Polytechnic '87, BA; University of East Anglia '89, MA; University of Alaska Fairbanks '94, MFA; University of Minnesota '04, PhD.

Bristow, William A.—1987—Professor of Electrical and Computer Engineering (2009), CEM. University of Alaska Fairbanks '88, BS; University of Alaska Fairbanks '92, PhD.

Brocious, Heidi Lenore—2003—Assistant Professor (2003), CLA; Acting Department Chair, CLA. University of Alaska Southeast '95, BEd; Walla Walla College '99, MSW.

Brower, Ronald Hopson—2006—Instructor of Inupiaq Eskimo (2006), CLA. Sorbonne University (France) '76, AA.

Brown, Jennifer Anne—2006—Assistant Professor of Emergency Services (2010), CTC/CRCD. University of Wisconsin Madison '90, BS.

Brown, Melissa Caldwell—1997—Associate Professor of Applied Business (2004), CTC/CRCD. University of Delaware '92, BA; University of Alaska Fairbanks '94, MA.

Brown, Stephen Castlebury—2007—Assistant Professor of Extension Education (2007), CES; Agriculture and Horticulture Agent, Copper River/Matanuska Susitna District, CES. Texas A&M University '87, BS; University of Texas at San Antonio '92, MS; State University of New York at Syracuse '99, PhD.

Buckley, Maida Gail—2003—Adjunct Assistant Professor of Education (2003), SOE. State University of New York '69, BA; Cambridge College '99, MEd.

Bueler, Edward Lee—1998—Associate Professor of Mathematics (2005), CNSM. California State University, Chico '91, BS; Cornell University '95, MS; '97, PhD.

Bult Ito, Abel—1999—Professor of Biology (2008), CNSM. University of Groningen '85, BS; '88, MS; Wesleyan University '94, PhD.

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Burke, Bridget Jeanne—2009—Assistant Professor of Library Science and Head, Alaska and Polar Regions Collections (2009), LIB. University of Wisconsin '84, BA; '86, MA; Wesleyan University '01, MA.

Burleson, Derick Wade—2001—Associate Professor of English (2007), CLA. Oklahoma State University '86, BS; Kansas State University '90, MA; University of Montana '96, MFA; University of Houston '01, PhD.

Burmeister, Richard A—1996—Coordinator of Rural Programs (2000), CRCD; Term Assistant Professor of Education (1999), SOE. Texas Lutheran College '68, BA; Old Lady of the Lake College '70, Certificate; University of Alaska Southeast '78, Certificate; East Texas State University '78, MS; California Coast University '87, EdD.

BurnSilver, Shauna Beth—2008—Postdoctoral Fellow (2008), AFES.

Butler Hopkins, Kathleen M.—1979—Professor of Music (1990), CLA. Trinity College of Music London, England '71, FTCL; The Juilliard School '75, BM; '76, MM; Yale University School of Music '78, MMA; '82, DMA.

Cable, Jessica Marie—2009—Postdoctoral Fellow (2009), IARC. Fort Lewis College '00, BS; University of Arizona '04, MS; '06, PhD.

Cahill, Catherine F.—1998—Associate Professor of Chemistry (2004), CNSM. University of California, Davis '90, BS; University of Washington '94, MS; University of Nevada, Reno '96, PhD.

Caldwell, Patricia S—1986—Assistant Professor of Education (2004), SOE; Director, Field Work (2004), SOE. Winthrop College '64, BS; Memphis State University '70, MEd.

Carlson, Cameron D—2009—Instructor of Emergency Management (2011), SOM. Monmouth University '86, MS; Webster University '95, MA.

Carmack, Eddy C—2005—Co Chapman Chair (2006), CNSM.

Carothers, Courtney L—2008—Assistant Professor (2008), SFOS. Cornell University '00, BA; University of Washington '04, MA; '08, PhD.

Carr, Richard S.—1995—Associate Professor of English (2005), CLA; Director, Writing Center (1998), CLA. University of Wisconsin '72, BA; University of Iowa '75, MA; University of Minnesota '94, PhD.

Carstens, Daniel R.—2002—Instructor of Mathematics, CDE (2002), CDE/CRCD. University of Alaska Anchorage '05, MEd.

Cascio, Julie Marie—2004—Assistant Professor of Extension (2004), CES; Health, Home and Family Development Agent, Copper River/Matanuska Susitna District, CES. University of Wisconsin Stout '83, BS; Oregon State University '94, MEd.

Castellini, Michael A.—1989—Dean (2011), SFOS. University of California, San Diego '75, BA; Scripps Institute of Oceanography '81, PhD.

Cee, Vincent J.—1993—Assistant Professor of Music (2008), CLA. University of Alaska Fairbanks '98, BM; Arizona State University '00, MME; '00, MMus; University of Massachusetts, Amherst '08, PhD.

Celaire, Jaunelle Roberta—2003—Associate Professor of Music (2009), CLA. Anderson Village School '88, BA; Bowling Green State University '00, MM; University of Michigan '03, DMA.

Chagnon, Gail M—2005—Adjunct Assistant Professor of Education (2005), SOE. Auburn University '72, BS; University of Alaska Fairbanks '84, MEd.

Chambers, Izetta Mae—2009—MAP Agent, Assistant Professor (2009), MAP/SFOS. University of Arizona '02, BS; '08, JD.

Chappell, Glenn Gilford—2000—Associate Professor of Computer Science (2006), CEM. University of Kansas '88, BS; '90, MA; University of Illinois '96, PhD.

Charles, Stephen Walkie—1995—Instructor of Yup'ik Eskimo (2001), CLA. University of Alaska Fairbanks '88, BEd; University of Massachusetts, Amherst '94, MEd.

Chen, Cheng fu—2002—Assistant Professor of Mechanical Engineering (2002), CEM. National Taiwan University, Taipei '88, BS; '90, MS; University of Wisconsin Madison '99, PhD.

Chen, Gang—1993—Professor of Mining Engineering (2002), CEM. Shandong Mining Institute '77, BS; Colorado School of Mines '84, MS; Virginia Polytechnic Institute and State University '89, PhD. P.E.

Chen (Sheng), Gang—2008—Assistant Professor of Mechanical Engineering (2008), CEM. Shanghai Jiao Tong University '84, BS; '87, MS; Nanyang Technical University '97, PhD.

Cherry, Jessica E—2006—Research Assistant Professor (2008), IARC. Columbia University '99, BS; '02, MA; '03, MS; '06, PhD.

Chowdhury, Ataur R—1990—Associate Professor of Physics (1998), CNSM. Dhaka University '77, BS; Clark University '85, PhD.

Christensen, Douglas H—1988—Professor of Geophysics (1998), CNSM. University of Utah '77, BS; University of Michigan '79, MS; '87, PhD.

Christie, Alison Anne—2006—BioScience Librarian (2006), LIB; Associate Professor of Library Science (2006), LIB. University of Melbourne '72, BAgrS; La Trobe University '76, MAgr; University of Hawai'i '82, MLS.

Christie, David Mark—2004—Professor of Marine Science, Director WCPRURC & Kasitsna Bay Lab (2004), SFOS; Director, Alaska Sea Grant Program (2009), SG/SFOS. Australian National University '69, BS; La Trobe University '78, MSc; University of Hawai'i '84, PhD.

Clausen, Richard Edgar—1978—Instructor of Developmental Mathematics (2005), CRCD. University of Alaska Fairbanks '75, BS; University of Oregon '77, MS.

Coakley, Bernard James—2002—Associate Professor of Geophysics (2002), CNSM; Department Chair (2006), CNSM. University of Michigan '81, BS; Louisiana State University '88, MS; Columbia University '89, MPhil; '91, PhD.

Coffman, Christine Elisabeth—2005—Associate Professor of English (2005), CLA. Cornell University '94, AB; University of Southern California '97, MA; '01, PhD.

Cole, Terrence M.—1988—Professor of History (1995), CLA; Director, Office of Public History (2004), CLA. University of Alaska Fairbanks '76, BA; '78, MA; University of Washington '83, PhD.

Collins, James Michael—1991—Associate Professor of Business Administration (1998), SOM. Illinois State University at Normal '72, BS; University of Texas at Austin '86, MBA; '91, PhD.

Collins, Richard L.—1994—Associate Professor of Atmospheric Sciences (2004), CNSM. National University of Ireland '86, BE; Case Western Reserve University '88, MS; University of Illinois '94, PhD.

Conde, Mark G—1993—Assistant Professor of Physics (2003), CNSM. University of Tasmania '82, BS; University of Adelaide '91, PhD.

Connors, Timothy C—2008—Assistant Professor of Military Science (2008), CLA. St. Bonaventure University '92, BA; La Salle University '97, MS.

Cook, Christine Rojas—2000—Assistant Professor of Education and Counseling (2002), SOE. Whitman College '91, BA; Western Washington University '93, MS; Washington State University, Vancouver '99, MIT.

Cooper, Gordon Burns—1990—Professor of English (1997), CLA; Department Chair (2008), CLA. Yale University '83, BA; University of Texas '86, MA; University of Texas '89, PhD.

Copeland, Audrey J—1989—Instructor of History, CDE (1989), CDE/CRCD. University of Michigan '64, BA.

Cortez, Travis Jon—2009—Assistant Professor of Automotive Technology (2009), CTC/CRCD. University of Alaska Anchorage '00, AAS.

Coursey, Dianne K—1995—Adjunct Assistant Professor of Education (1999), SOE. University of Connecticut '66, BA; University of Alaska Fairbanks '71, MAT.

Coyle, Kenneth O.—1974—Research Assistant Professor of Marine Science (2008), IMS/SFOS. University of Washington '72, BS; University of Alaska Fairbanks '74, MS; '97, PhD.

Crapo, Charles A.—1983—Professor of Seafood Science (Technology) (1999), FITC/MAP/SFOS. Oregon State University '74, BS; '83, MS; University of Rhode Island '96, PhD.

Creed, John—1987—Professor of General Studies (1999), CC/CRCD; Professor of Journalism, CLA. University of Massachusetts, Amherst '75, BA; University of Oregon '83, MA.

Criddle, Keith Richard—1989—Ted Stevens Distinguished Professor of Marine Policy (2006), JC/SFOS; Professor of Fisheries (2006), SFOS. California State University, Sacramento '82, BS; University of California, Davis '84, MS; '89, PhD.

Cronin, Matthew Anthony—2004—Associate Professor of Animal Genetics (2004), SNRAS. State University of New York '76, BS; Montana State University '86, MS; Yale University '89, PhD.

Croskrey, Wendy E.—1990—Associate Professor of Art (1998), CLA. University of Minnesota '85, BFA; Ohio State University '90, MFA.

Crouse, David John—2007—Associate Professor of English (2009), CLA. University of Alaska Fairbanks '94, MFA.

Cullenberg, Paula J.—1995—Professor of Marine Science (2006), SFOS; Leader, Marine Advisory Program (2003), SFOS. Brown University '77, BA; University of Washington '82, MS.

Cundiff, Nicole LeAnn—2010 - Director, Northern Leadership Center (2010), SOM; Assistant Professor of Business Administration (2010), SOM. Southern Illinois University '02, BA; '05, MBA; '07, MA; '10, PhD.

Curda, Linda R—1982—Associate Professor of Community Health (2000), CRCD. University of Maryland '71, BS; Johns Hopkins University '77, MPH.

Daanen, Ronald—2004—Postdoctoral Fellow (2005), INE.

Daku, Michael J.—1991—Assistant Professor of Justice (1999), CLA. University of Alaska Fairbanks '81, BA; '84, MEd.

Dandekar, Abhijit Y—2000—Professor of Petroleum Engineering (2010), CEM. Nagpur University, India '87, BTech; Heriot Waitt University, UK '94, PhD.

Darrow, Margaret Marie—1993—Assistant Professor (2008), CEM. University of Washington, BS; University of Alaska Fairbanks '95, MS; '02, BS; '07, PhD.

Das, Debendra K.—1984—Professor of Mechanical Engineering (1993), CEM; Department Chair, CEM. Sambalpur University '72, BS; Brown University '74, MS; University of Rhode Island '83, PhD. P.E.

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Davis, Michael E.—1993—Associate Professor, Department of Alaska Native and Rural Development (2001), BBC/CRCD. San Diego State University '69, BA; University of Alaska Fairbanks '78, MAT.

Davis, Michael Lee—2004—Professor of Accounting (2007), SOM; Accounting Program Director (2006), SOM. California State University, Fresno '73, BS; University of Pennsylvania '79, MBA; University of Massachusetts '86, PhD.

Dayo, Dixie Marie—1996—Assistant Professor of Rural Development (2003), CRCD. University of Alaska Fairbanks '91, AA; '94, BA; '03, MA.

de Wit, Cary William—1997—Associate Professor of Geography (2006), SNRAS. University of Kansas '84, BS; '92, MA; '97, PhD.

Deal, Clara Mary—1992—Research Assistant Professor (2010), IARC. University of Alaska Fairbanks '81, BS; '85, BS; '86, MS; '98, PhD.

Dehn, Jonathan—1997—Research Associate Professor (2006), GI. Arizona State University '87, BS; '87, MS; Universitat Zu Kiel '92, PhD.

Dehn, Larissa Ariane—1998—Assistant Professor (2008), IMS/SFOS. University of Goettingen, Germany '93, BS; University of Kiel '97, MS; University of Alaska Fairbanks '05, PhD.

Delisa, Susan Manette—1985—Instructor of Biology (2004), CDE/CRCD. Antioch College '74, BS; University of Alaska Fairbanks '79, MA; '79, MS; '89, PhD.

Demientieff, LaVerne M—1998—Clinical Assistant Professor (2006), CLA. University of Alaska Fairbanks '98, Certificate; '00, AAS; '04, BA; Washington University in St. Louis '05, MSW.

Dexter, Charles N.—1985—Professor of Applied Business (1995), CTC/CRCD. University of Alaska Fairbanks '77, BA; '83, MBA.

Dickey, Maryanne—1996—Assistant Professor of General Studies (1998), KUC/CRCD. College of New Jersey '69, BA.

Diebel, Carol E—2009—Director, UA Museum of the North, MUSEUM.

Dierenfield, Candi L.—2004—Term Assistant Professor of Extension (2004), CES; Extension 4 H Youth Development Agent, Eielson Air Force Base and Fairbanks State Office (2009), CES. Woodbury University '97, BS; Montana State University '99, MS.

Dinstel, Roxie Rodgers—1995—Professor of Extension (2004), CES; Health, Home and Family Development Program Chair (2007), CES. Eastern New Mexico University '76, BS; Texas Woman's University '82, MS.

Doak, Patricia—1998—Associate Professor of Biology (2006), CNSM. Dartmouth College '86, BA; Cornell University '97, PhD.

Doerpinghaus, Anne X—2002—Term Assistant Professor of Certified Nursing Program (2008), CTC/CRCD. Carleton College '78, BA; Pace University '85, MS.

Dong, Chunlian—2003—Assistant Professor of Business Administration (2003), SOM. Shanghai International Studies University '86, BA; University of Tennessee at Chattanooga '99, MBA; University of Kentucky '05, PhD.

Dong, Yongtao—2007—Assistant Professor (2007), CEM.

Douglas, Hector D—2000—Assistant Professor of Biology (2006), KUC/CRCD. Evergreen State College '91, BA/BS; Wake Forest University '96, MS; University of North Carolina at Greensboro '99, MFA; University of Alaska Fairbanks '06, PhD.

Drew, Kelly L.—1991—Professor of Chemistry and Biochemistry (2008), CNSM; Associate Director IAB (2007), CNSM. University of Alaska Fairbanks '81, BS; Albany Medical College '88, PhD.

Druckenmiller, Patrick S—2007—Assistant Professor of Geology (2007), CNSM; Curator of Earth Sciences (2007), MUSEUM. University of Wisconsin Madison '91, BA; Montana State University, Bozeman '98, MS; University of Calgary, Canada '06, PhD.

Duffy, Lawrence Kevin—1987—Interim Dean (2007), GRAD; Professor of Chemistry and Biochemistry (1992), CNSM. Fordham University '69, BS; University of Alaska Fairbanks '72, MS; '77, PhD.

Eckert, Ginny L—2008—Associate Professor of Fisheries (2008), JC/SFOS. Dartmouth College '90, BA; University of Florida, Gainesville '94, MS; University of California, Santa Barbara '99, PhD.

Eder, Lorna E—2011—Term Instructor of Piano (2011), CLA. Washington State University '75, BM; California Institute of the Arts '80, MFA.

Edmonds, Brian William—2009—Assistant Professor of Chemistry and Biochemistry (2009), CNSM. Stanford University '85, BS; Columbia University '90, PhD.

Ehrlander, Mary F.—1991—Associate Professor of History (2008), CLA; Director of Northern Studies (2010), CLA. University of Alaska Fairbanks '92, BA; '93, MA; University of Virginia '95, MA; '99, PhD.

Eicken, Hajo—1998—Associate Professor of Geophysics, Sea Ice (1998), CNSM/GI/IARC. Technische Universitat Clausthal, Germany '88, Diploma; Universitat Bremen '90.

Ellingson, Brian E—2002—Assistant Professor of Process Technology (2007), CTC/CRCD.

Esop, Jakub Jerome—1988—Associate Professor of Culinary Arts (1997), CTC/CRCD. Master Chief Degree of Marianske Lazne, Czechoslovakia '66.

Euskirchen, Susanne Eugenie—2004—Research Assistant Professor of Terrestrial Exosystem Science (2009), IAB. Marymont College '94, BS; Johns Hopkins University '97, MS; Michigan Tech University '03, PhD.

Fabbri, Cindy E—2005—Instructor (2005), SOE. Miami University '94, BA; University of Alaska Fairbanks '02, MEd.

Farmer, Daryl Lee—2010—Assistant Professor (2010), CLA. Adams State College '89, BA; University of Nebraska Lincoln '02, MA; '07, PhD.

Faudree, Jill R—1998—Associate Professor of Mathematics (2004), CNSM. Tulane University '91, BS; University of Memphis '93, MS; Emory University '98, PhD.

Fazzino, David Victor—2008—Term Assistant Professor (2008), CLA.

Fedorov, Vadim—2001—Research Associate (2006), IAB.

Fee, David Edgar—2010—Assistant Professor (2010), GI. Whitman College, BA; University of Wyoming '04, MS; University of Hawai'i Manoa '10, PhD.

Filler, Dennis MacArthur—1994—Assistant Professor of Civil and Environmental Engineering (2006), CEM. University of Central Florida '86, BS; '88, MS; University of Alaska Fairbanks '97, PhD.

Filotei, Jenifer A.—2001—Term Assistant Professor of Dental Assisting (2004), CTC/CRCD. Edmonds Community College '86, AAS.

Finstad, Gregory L.—1981—Assistant Professor of Range Ecology (2008), SNRAS/AFES; Program Manager, Reindeer Research Program (2000), SNRAS/AFES. University of Alaska Fairbanks '81, BS; '08, PhD.

Fitts, Alexandra F—1995—Professor of Languages and Literature (2008), CLA. Furman University '84, BA; Bowling Green State University '87, MA; Duke University '95, PhD.

Fix, Peter J.—2002—Associate Professor of Outdoor Recreation Management (2008), SNRAS. University of Wisconsin La Crosse '93, BS; Colorado State University '96, MS; '02, PhD.

Fochesatto, Gilberto Javier—2004—Associate Professor of Micrometeorology (2010), CNSM/GI. Universite Pierre Et Marie Curie '00, PhD.

Fok, Ching Ting—2006—Research Associate (2011), CANHR/IAB. Simon Fraser University '01, BA; McGill University '03, MA; '06, PhD.

Foldoe, Audrey J.—2000—Instructor of Applied Business (2000), CDE/CRCD.

Fong, Quentin Sai Wing—1999—Associate Professor of Fisheries (2006), FITC/MAP/SFOS. Florida Institute of Technology '81, BS; '89, MS; University of Rhode Island '99, PhD.

Fowell, Sarah J.—1997—Associate Professor of Geology (2005), ESTES/CNSM. University of Wisconsin '87, BS; Columbia University '91, MPhil; '91, MS; '94, PhD.

Freitag, Gary R.—2001—Associate Professor (2008), MAP/SFOS. Philadelphia University, BS; Old Dominion University, MS.

Fresco, Nancy L.—2002—Research Assistant Professor (2007), AFES. University of Alaska Fairbanks '06, PhD.

Freymueller, Jeffrey—1995—Professor of Geophysics (2004), CNSM. California Institute of Technology '85, BS; University of South Carolina '88, MS; '91, PhD.

Gabrielli, Ralph B.—1980—Associate Professor, Department of Alaska Native and Rural Development (2001), CRCD; Associate Professor of Education (1987), CRCD. State University of New York '65, BA; '66, MS; Syracuse University '71, PhD.

Ganguli, Rajive—1999—Professor of Mining Engineering (2010), CEM. Osmania University, India '91, BS; Virginia Polytechnic Institute and State University '95, MS; University of Kentucky '99, PhD. P.E.

Genetti, Jon Dudley—1993—Associate Professor of Computer Science (2001), CEM. Texas A&M University '86, BS; '88, MSC; '93, PhD.

George Bettisworth, Retchenda Bravante—2009—Clinical Assistant Professor (2009), CLA. University of Alaska Fairbanks '00, BA; University of Michigan '07, MSW.

George, John K.—2008—Assistant Professor of Fire Science (2008), CTC/CRCD. University of Alaska Fairbanks '95, AAS; '98, BEd.

Gerlach, Scott Craig—1988—Professor of Cross Cultural Studies (2008), CLA. University of Oklahoma '75, BA; '77, MA; Brown University '89, PhD.

Gerlich, Bella Karr—2011—Dean of Libraries (2011), LIB. Virginia Commonwealth University '85, BFA; Carnegie Mellon University '99, MPM; University of Pittsburgh '06, PhD.

Gharrett, Anthony John—1976—Professor of Fisheries (1989), JC/SFOS. California Institute of Technology '67, BS; Oregon State University '73, MS; '75, PhD.

Gibson, Georgina Anne—1999—Research Assistant Professor (2010), IARC. University of Wales Bangor, U.K. '98, BS; University of Alaska Fairbanks '04, PhD.

Gilsdorf, Nicolle H—2008—Term Instructor (2008), SNRAS. Evergreen State College '93, BA; '05, MA.

Gimbel, John G.—1987—Professor of Mathematics (1993), CNSM. Andrews University '77, BS; Western Michigan University '84, PhD.

Glowa, Josef Konrad—2007—Associate Professor of German (2007), CLA. University of Paderborn '84; Brown University '97, PhD.

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Goering, Douglas John—1989—Professor of Mechanical Engineering (1999), CEM; Dean (2008), CEM. University of Washington ’81, BS; University of Alaska Fairbanks ’84, MS; University of California, Berkeley ’89, PhD.

Goering, Gregory E.—1990—Professor of Economics (1998), SOM. University of Alaska Fairbanks ’84, BA; ’86, MS; Purdue University ’88, MS; ’90, PhD.

Golux, Stephan—2009—Assistant Professor (2009), CLA. Massachusetts Institute of Technology ’87, BS; Yale School of Drama ’97, MFA.

Goodwin, Mary C.—1999—Associate Professor of Art (2008), CLA. University of California, Santa Cruz ’75, BA; Boston University ’79, MA; ’90, PhD.

Gorman, Robert F.—1991—Professor of Extension (2002), CES; Resource Development Agent, Anchorage District (1991), CES. University of Massachusetts ’67, AA; University of Arkansas ’74, BSA; Washington State University ’77, MS.

Goropashnaya, Anna—2004—Postdoctoral Fellow (2005), IAB.

Grabowska, Flora Bernice—2010—Research Associate Professor/Librarian (2010), GI. University of Saint Andres ’72, BS; University of Western Ontario ’81, MS.

Gradinger, Rolf R.—2001—Associate Professor of Marine Science (2001), IMS/SFOS. University of Maine ’81, BS; University of Kiel ’89, MS; ’89, PhD.

Greci, Dana—1997—Associate Professor of Developmental Education (2009), CRCD. Brown University ’86, BA; University of Alaska Fairbanks ’91, MA; ’01, MFA.

Green, Thomas Kent—2000—Professor of Chemistry (2001), CNSM. Kearney State College ’77, BS; University of Tennessee ’84, PhD.

Greenberg, Andrea Rose—1992—Term Assistant Professor (2002), CDE/CRCD. Washington State University ’87, BA; ’90, MA.

Greenberg, Joshua A.—1990—Associate Professor of Resource Economics (1995), SNRAS/AFES. University of Connecticut ’82, BA; University of Alaska Fairbanks ’84, MS; Washington State University ’90, PhD.

Griffith, Brad—1996—Associate Professor of Wildlife Ecology (1996), AKCFWRU/CNSM/IAB; Leader (2011), AKCFWRU/CNSM/IAB. University of Missouri Columbia ’69, BA; Oregon State University ’77, MS; University of Idaho ’88, PhD.

Grikurova, Alla—1990—Instructor of Russian (1990), CLA. St. Petersburg State University ’79, MA.

Grosse, Guido—2006—Research Assistant Professor (2009), GI. Technical University of Freiberg ’97, BS; ’01, MS.

Grossweiner, Karen Ann—2005—Assistant Professor of English (2005), CLA. Carleton College ’76, BA; University of Wisconsin Madison ’86, MA; ’01, PhD.

Gustafson, Karen Aileen Elsa—2004—Assistant Professor of Music (2005), CLA. University of Victoria, Canada ’87, BM; Northwestern University ’91, MM; University of Minnesota ’01.

Guthridge, George L—1988—Professor of English and General Studies (1999), BBC/CRCD. Portland State University ’70, BA; University of Montana ’72, MFA; University of Alaska Fairbanks ’10, PhD.

Hafez, Sabry A Abdel—2010—Assistant Professor of Mining Engineering (2010), CEM. Assiut University Egypt ’91, BSc; ’96, MSc; Egypt/Kyoto University Japan ’00, PhD. P.E.

Hahn, Suzan L.—1997—Associate Professor of Library Science (2008), LIB. University of Alaska Fairbanks ’95, BA; University of Illinois at Urbana Champaign ’96, MS.

Haight, Glenn Edwin—2007—Research Assistant Professor (2007), MAP/SFOS. University of New Mexico ’91, BA; American Graduate School of International Management ’94, MIM.

Hall, Alicia A—2010—Assistant Professor (2010), CLA. Michigan State University ’99, BA; University of Minnesota ’08, PhD.

Hanks, Catherine L.—1986—Associate Professor of Geology (1999), GI. University of Washington ’81, MS; University of Alaska Fairbanks ’91, PhD.

Hansen, Roger A.—1994—State Seismologist (1994), GI; Research Professor of Geophysics (1994), GI. University of California, Berkeley ’75, BS; ’77, MS; ’81, PhD.

Hanson, Kathy S—1986—Regional Director of Adult Basic Education and Faculty (1988), KUC/CRCD. Drury College ’72, BA.

Hapsmith, Linda T.—2005—Director Academic Advising Center (2005), PROV; Associate Faculty (2010), SOE. University of Utah ’84, BS; ’89, MS.

Harada, Koichiro—2011—Visiting research scientist (2011), IARC.

Harbaugh, John P.—1988—Instructor of Music, CDE (1996), CDE/CRCD. University of Northern Iowa ’75, BA; North Texas State University ’77, MME; ’77, MMus.

Harbo, Lisa A.—1990—Instructor of English (2004), CDE/CRCD. University of Alaska Fairbanks ’84, BS; Vermont College ’87, MA; California State University ’87, MA; Dartmouth College ’92, MA.

Harding, Patricia J—1998—Assistant Professor of Social Work (1998), CC/CRCD. Muhlenberg College ’61, BA; University of Hawai’i ’63, MSW; University of Pennsylvania ’96, PhD.

Hardy, Cynthia Louise—1986—Associate Professor of Developmental English (2003), CRCD. Pennsylvania State University ’71, BA; University of Alaska Fairbanks ’86, MFA; University of Southern Mississippi ’94, PhD.

Hardy, Sarah Mincks—2007—Assistant Professor of Marine Biology (2009), SFOS. University of California, Santa Cruz ’96, BA; San Francisco State University ’98, MS; University of Hawai’i Manoa ’05, PhD.

Harris, Michael Bruce—2003—Associate Professor of Biology (Neuroscience) (2008), CNSM. University of British Columbia ’90, BS; ’92, MS; ’97, PhD.

Harris, Norman R—2002—Assistant Professor of Range Management (2002), SNRAS/AFES. Oregon State University ’92, BS; ’98, MS; ’01, PhD.

Hartman, Christopher M.—1997—Associate Professor of Computer Science (2002), CEM. University of Alaska Fairbanks ’91, BS; University of Illinois at Urbana Champaign ’97, PhD.

Hartmann, Anita Marie—1989—Associate Dean (2008), CLA. State University of New York at Albany ’81, AS; ’89, BS; University of Alaska Fairbanks ’93, PhD.

Harvey, Pauline—2010—Director, Chukchi Campus (2010), CC/CRCD. University of Alaska Fairbanks ’92, MEd.

Haselwimmer, Christian Edward—2010—Postdoctoral Fellow (2010), GI. Oxford Brookes University, UK ’01, BSc; University of London ’04, MSc; Imperial College, London ’10, PhD.

Haugen, Linda Lee—2001—Director (2006), NWC/CRCD. University of Arizona ’72, BFA; ’78, MEd; ’90, PhD.

Hawkins, Joseph G.—1987—Professor of Electrical and Computer Engineering (2000), CEM. University of Alaska Fairbanks ’82, BS; Stanford University ’84, MS; ’88, PhD.

Hay, Brian—1998—Assistant Professor of Computer Science (2008), CEM. University of Alaska Fairbanks ’00, BS; ’01, MS; Montana State University ’05, PhD.

He, Ruo—2009—Postdoctoral Fellow (2009), CEM.

Healy, Joanne—2008—Term Assistant Professor of Special Education (2008), SOE. University of Alaska Fairbanks ’83, BEd; Western Oregon State College ’87, MS.

Heaton, John W—2000—Associate Professor of History (2006), CLA; Department Chair (2006), CLA. Portland State University ’91, BA; Utah State University ’93, MA; Arizona State University ’99, PhD.

Hecimovich, Derylee Ann—2001—Assistant Professor of Extension (2006), CES; 4 H and Youth Development Agent, Copper River/Matanuska Susitna District (2001), CES. University of Wisconsin Stevens Point ’81, BS; University of Alaska Anchorage ’06, MS.

Heiser, Patricia Anne—2006—Assistant Professor of Geography (2008), SNRAS. University of Vermont ’90, BS; University of Alaska Fairbanks ’97, PhD.

Henrichs, Susan Margaret—1982—Provost, PROV; Executive Vice Chancellor for Academic Affairs, PROV. University of Washington ’75, BS; Woods Hole Oceanographic Institution ’80, PhD.

Henry, David A.—2007—Assistant Professor of Foreign Languages and Literatures (2007), CLA. Earlham College ’93, BA; University of Michigan ’04, MA.

Henry, Robyn Marcella—1992—Term Assistant Professor of Rural Human Services (2004), IAC/CRCD. Boston University ’92, MS.

Henry Stone, Laura Ruth—2002—Term Assistant Professor of Education (2008), SOE. St. Mary’s College of Maryland ’97, BA; Saint Mary of the Woods College, Indiana ’02, MA; University of Alaska Fairbanks ’08, PhD.

Herrick, Robert R—2004—Research Associate Professor (2004), GI. Texas A&M University ’85, BS; University of Houston ’88, MS; Southern Methodist University ’93, PhD.

Herrmann, Mark Leonard—1990—Professor of Economics (1998), SOM; Dean (2008), SOM. University of California, Davis ’82, BS; ’85, MS; Washington State University ’90, PhD.

Heusinkveld, Evelyn Jean—1986—Associate Professor of Applied Business (2002), CTC/CRCD. Indian Hills Community College ’78, AA; Northeast Missouri State University ’78, BS.

Heyne, Eric F—1986—Professor of English (2001), CLA. University of Washington ’78, BA; Ohio State University ’82, MA; ’84, PhD.

Hickman, Joseph O.—1995—Director, Student Support Services Program (2006), PROV. University of Alaska Fairbanks ’00, BS; ’10, MA.

Himelbloom, Brian H.—1987—Associate Professor of Seafood Science (Microbiology) (1994), FITC/SFOS. Northern Illinois University ’78, BS; Louisiana State University ’80, MS; North Carolina State University ’85, PhD.

Hinzman, Larry D.—1982—Director (2007), IARC; Professor of Civil & Environmental Engineering (2007), IARC. South Dakota State University ’79, BS; Purdue University ’81, MS; University of Alaska Fairbanks ’90, PhD.

Hock, Regine Marianne Elisabeth—2007—Associate Professor of Geophysics (2007), CNSM. Brock University ’87, BS; Freiburg University (Germany) ’91, MS; ETH/Swiss Federal Institute of Technology, Zurich ’97, PhD.

Hoefler, Vaughan J.—2010—Assistant Professor of Dental Hygiene (2010), CTC/CRCD. University of Alaska Fairbanks ’79, BS; University of the Pacific ’84, PhD.

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Hogan, Maureen P.—2000—Assistant Professor of Education (2000), SOE. Southern Illinois University '92, BA; University of Illinois '92, MA; '00, PhD.

Hollmén, Tuula Elina—2002—Research Associate Professor (2002), IMS/SFOS. University of Helsinki '92, DVM; '02, PhD.

Holloway, Patricia Sue—1984—Professor of Horticulture (2004), SNRAS/AFES; Director, Georgeson Botanical Garden (1989), SNRAS/AFES. Millersville University '73, BA; Washington State University '79, MS; University of Minnesota '82, PhD.

Holton, Gary M.—1999—Associate Professor of Linguistics (2005), CLA. University of Alaska Fairbanks '86, BS; University of Michigan '87, MA; University of California, Santa Barbara '00, PhD.

Holzlehner, Tobias Sven—2000—Postdoctoral Fellow (2007), CLA. University of Alaska Fairbanks '06, PhD.

Hook, Robert J—2009—Assistant Professor of Process Technology (2009), CTC/CRCD. University of Alaska Fairbanks '90, AA.

Hoover, Kara Celine—2008—Assistant Professor (2008), CLA.

Hopcroft, Russell R.—2000—Professor of Marine Science (2010), IMS/SFOS. University of Guelph '83, BS; '88, MS; '97, PhD.

Hopkins, John R.—1979—Professor of Music (1993), CLA. Bethel College '69, BA; University of Iowa '76, MA; '82, DMA.

Hopper, Ann Davis—1994—Assistant Professor and Statewide Director of Rural Human Services (2005), IAC/CRCD. Old Dominion University '78, BS; University of Denver '85, MSW.

Hornig, Joan Ellen—1999—Instructor (2000), SOE. University of California, Davis '81, BA; University of Washington '85, MFA.

Houlton, Kelly Lynne—1989—Assistant Professor of Developmental Mathematics (2009), CRCD. University of Alaska Fairbanks '88, BS.

Howard, William A—2001—Associate Professor of Chemistry & Biochemistry (2008), CNSM. Tulane University '90, BS; Columbia University '91, MA; '95, PhD.

Huang, Scott L.—1981—Professor of Geological Engineering (1991), CEM. Cheng Kung University, Taiwan '74, BS; University of Kentucky '78, MS; University of Missouri Rolla '81, PhD. P.E.

Hueffer, Karsten—2006—Assistant Professor of Microbiology (2006), CNSM. School of Veterinary Medicine Hannover (Germany) '99, DVM; Cornell University '03, PhD.

Huettmann, Falk—2003—Associate Professor of Wildlife Biology (2009), CNSM. University of Goettingen, Germany '91, Diploma; University of Frieburg, Germany '92, Diploma; University of Munich, Germany '92, MS; University of New Brunswick, Canada '00, PhD.

Hullavarad, Nilima Vijay—2006—Postdoctoral Fellow (2006), INE. University of Pune (India) '91, BS; '93, MS; '95, MPhil; '01, PhD.

Hullavarad, Shivalingappa Shivabasappa—2006—Postdoctoral Fellow (2006), INE. Karnatak University (India) '90, BS; '92, MS; University of Pune (India) '00, PhD; University of Alaska Fairbanks '09, MBA.

Hulsey, J Leroy—1987—Professor of Civil Engineering (1987), CEM; Associate Director of Alaska University Transportation Center (2006), INE. Missouri School of Mines and Metallurgy '64, BSCE; University of Missouri Rolla '66, MS; '76, PhD. P.E.

Hundertmark, Kris Joseph—2005—Associate Professor of Wildlife Biology (2010), CNSM. Pennsylvania State University '78, BS; Oregon State University '82, MS; University of Alaska Fairbanks '02, PhD.

Hunter, Christine M—2006—Assistant Professor of Wildlife Ecology (2006), CNSM. University of Idaho '92, BS; Purdue University '96, MS; University of Otago, Dunedin (New Zealand) '01, PhD.

Husted, Edgar S.—1992—Professor of Paralegal Studies (2006), CTC; Instructor of Journalism, CDE, CTC/CDE/CRCD. Carleton College '59, BA; Indiana University '62, LLB.

Hutchings, Jennifer K.—2001—Research Assistant Professor (2008), IARC. University College, London '96, BSc; '01, PhD.

Hwu, Shih-Hsung (Alex)—(2008)—Director, Center for Distance Education (2009), CDE/CRCD. Feng-Chia University '96, BS; Kansas Wesleyan University '99, MBA; Kansas State University '08, ABD.

Iceman, Christopher R—2007—Postdoctoral Fellow (2010), GI. University of Utah '00; '08, PhD.

Ickert, Stefanie M—2006—Curator of Herbarium (2006), MUSEUM; Assistant Professor of Botany (2006), CNSM. Arizona State University '97, MS; '03, PhD.

Ihl, Claudia—1995—Assistant Professor of Biology (2006), NWC/CRCD. University of Goettingen, Germany '93, BS; University of Alaska Fairbanks '99, MS; '07, PhD.

Iken, Katrin Barbara—2002—Associate Professor of Marine Biology (2002), IMS/SFOS. University of Dusseldorf, Germany '87, BS; University of Bayreuth, Germany '91, MA; Alfred Wegener Inst. for Polar & Marine Research, Germany '95, PhD.

Illingworth, Kevin M.—2002—Term Assistant Professor (2002), IAC/CRCD; Tribal Management Coordinator (2002), IAC/CRCD. University of Alaska Fairbanks '93, BA; University of Idaho '00, JD.

Irish, Joel D.—1998—Professor of Anthropology (2002), CLA; Curator of Physical Anthropology, MUSEUM. Mankato State University '80, BS; '84, MS; Arizona State University '93, PhD.

Ivantchikova, Alla—2010—Assistant Professor of English (2010), CLA. Moscow State University '99, BA; Central European University '00, MA; State University of New York at Buffalo '08, PhD.

Iwata, Hiroki—2008—Research Scholar (2008), IARC. University of Tsukuba '08, PhD.

Izbekov, Pavel Edgarovich—1996—Research Associate (2006), GI. University of Alaska Fairbanks '02, PhD.

Jacobsen, Gary H—2009—Assistant Professor (2009), SOE. Western Montana College '72, BS; Montana State University '84, MEd; '86.

Jeffries, Martin Orme—1985—Research Professor of Geophysics (1985), GI. University of Sheffield, England '79, BA; University of Manchester, England '81, MS; University of Calgary, Canada '85, PhD.

Jensen, Karen L.—1996 - Circulation/Interlibrary Loan Manager (1998), LIB; Assistant Professor of Library Science (2007), LIB. Grinnell College '86, BA; University of Washington '96, MLS.

Jewett, Stephen Carl—1974—Research Professor of Marine Science (1998), IMS/SFOS. John Brown University '71, BA; University of Alaska Fairbanks '77, MS; '97, PhD.

Jin, Meibing—1998—Research Associate Professor (2008), IARC. Qinghua University '89, BS; First Institute of Oceanography '92, MS; Chinese Academy of Sciences '98, PhD.

John, Theresa A.—1986—Assistant Professor, Department of Alaska Native and Rural Development (2002), CRCD. University of Alaska Fairbanks '83, BA; '92, MEd; '10, PhD.

Johnson, Don Preston—2002—Assistant Professor of Law Enforcement (2007), CTC/CRCD.

Johnson, Galen R.—2006—Assistant Professor of Construction Management (2007), CTC/CRCD. University of Alaska Fairbanks '79, BS; '02, MS.

Johnson, Jerome Ben—2008—Term Research Professor (2008), CEM.

Johnson, Kristofer Dee—2008—Postdoctoral Fellow (2008), IAB.

Johnson, Mark A.—1991—Professor of Marine Science (2003), IMS/SFOS. University of Miami '77, BS; Texas A&M University '81, MS; '87, PhD.

Johnson, Terry L.—1991—Professor of Fisheries (2005), SFOS; Marine Extension Agent (1991), MAP/SFOS. University of Washington '74, BA; '84, MS.

Johnson, Wendy Elyse—2003—Assistant Professor of Allied Health (2010), CTC/CRCD. Loma Linda University '88, BS.

Johnston, Duff—2010—Assistant Professor, CLA. University of Wisconsin Madison '92, BA; University of Arizona '03, MA.

Jolis, Jennifer—2006—Assistant Professor of Culinary Arts (2010), CTC/CRCD. University of Alaska Fairbanks '69, BA.

Joly, Julie Judith Lurman—2004—Associate Professor of Resources Law and Policy (2010), SNRAS/AFES. Rutgers University '97, BS; Yale University '99, MES; Georgetown University '03, JD.

Jones, Jeremy Boyd—2000—Associate Professor of Biology (2006), CNSM. San Francisco State University '88, BS; Virginia Commonwealth University '90, MS; Arizona State University '94, PhD.

Joseph, Bernice M.— 1994—Vice Chancellor for Rural, Community and Native Education (2006), CRCD. University of Alaska Fairbanks '88, BBA; '98, MBA.

Joseph, Jacob—1991—Professor of Business Administration (1999), SOM; Business Administration Undergraduate Director (2004), SOM. University of Calgary, Canada '84, BComm; University of Iowa '86, MBA; '92, PhD.

Juday, Glenn Patrick—1981—Professor of Forest Ecology (2001), SNRAS/AFES. Purdue University '72, BS; Oregon State University '76, PhD.

Kaden, Ute Irmgard—2008—Assistant Professor of Education (2008), SOE. Technical University Dresden '81, MS; University of Texas at Brownsville/Texas Southmost College '03, MEd; University of Houston '07, EdD.

Kaiser, Janet Shantz—2002—Village Adult Basic Education Coordinator and Faculty (2003), KUC/CRCD. University of Washington '02, BA.

Kamerling, Leonard J.—1987—Curator, Alaska Center for Documentary Film (1999), MUSEUM; Professor of English (2010), CLA. Franconia College '65, AA; University of Alaska Fairbanks '99, MFA.

Kanevskiy, Mikhail Zinovyevich—2005—Research Assistant Professor (2007), CEM.

Kaplan, Lawrence D.—1974—Director, Alaska Native Language Center (2000), CLA; Professor of Linguistics (2001), CLA. University of California, Berkeley '72, BA; University of California, San Diego '74, MA; '79, PhD.

Kardash, Diane Logan—1998—Term Instructor (2003), SOE. University of Southern California '90, BS; California State University, Fresno '94, MA.

Karlsson, Meriam G.—1988—Professor of Horticulture (2002), SNRAS/AFES. Swedish University of Agricultural Sciences '79, BS; Michigan State University '84, MS; '87, PhD.

Kaspari, Phillip N.—1998—Term Instructor of Extension (2000), CES; Agriculture and Horticulture Agent, Delta Junction (2000), CES. North Dakota State University '84, BS.

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Kassof, Brian E—2009—Assistant Professor of History (2009), CLA. Wesleyan University '89, BA; '95, MA; University of California, Berkeley '00, PhD.

Kawula, John Douthit—1998—Associate Professor of Library Science (2005), CLA; Government Documents and Map Librarian (1998), LIB. Trent University '74, BA; Emory University '75, MLn.

Keller, John W.—1979—Professor of Chemistry and Biochemistry (1991), CNSM. Ohio State University '68, BS; University of Wisconsin '76, PhD.

Kenaston, Amy Barnhardt—1999—Term Assistant Professor of Education (2004), SOE. Brown University '92, BA; University of Colorado at Denver '95, MA.

Kerr, Marianne L.—2003—Assistant Professor of Extension (2003), CES; 4 H and Youth Development Agent, Anchorage District (2003), CES. University of Minnesota '74, BA; University of Alaska Anchorage '02, MEd.

Keskinen, Mary J—1984—Associate Professor of Geology (1991), CNSM. Smith College '73, BA; Stanford University '79, PhD.

Khataniar, Santanu—1991—Professor of Petroleum Engineering (2005), CEM. Indian School of Mines '83, BT; University of Texas '85, MS; '91, PhD.

Kholodov, Alexander Lvovich—2007—Postdoctoral Fellow (2008), GI.

Kielland, Knut—1982—Associate Professor of Biology (2008), CNSM. University of Alaska Fairbanks '82, BS; '90, PhD.

Kim, Sun Woo Woo—2010—Assistant Professor of Mechanical Engineering (2010), CEM. Hanyang University '00, BS; '05, MS; Duke University '08, PhD.

Kim, Yong Won—2004—Research Assistant Professor (2004), IARC. Pukyong National University, Korea '85, BS; '92, MS; Hokkaido University '98, PhD.

Kimble, James E—2010—Math Coordinator, Student Support Services Program (2011), PROV; Instructor, Mathematics (2010), CDE. Mount Union College '73, BA; Ohio State University '79, MS; Kent State University '91, MA; Case Western Reserve University '00, PhD.

Kingsley, Ilana Michelle—2003—Associate Professor of Library Science (2009), LIB. Oneonta State University '88, BA; Syracuse University '91, MLIS.

Kirk, K. Leslie—1986—Instructor of Geography, CDE (1990), CDE/CRCD. University of Utah, BS; MS.

Kitaysky, Alexander Stanislav—2003—Associate Professor of Biology (2007), CNSM. Irkutsk State University, Russia '84, BS; '86, MS; University of California, Irvine '96, PhD.

Kline, Romina M.—2001—Instructor of English (2002), CDE/CRCD. University of Wisconsin '88, BS; '94, MS.

Kljaich, Lisa J.—2001—Instructor of Music (2000), CLA; Instructor of Art/Music/Theatre, CDE (2001), CDE/CRCD. DePauw University '83, BA; University of St. Thomas '95, MA.

Knapp, Karl David—2008—Assistant Professor of Music (2008), CLA. Illinois Wesleyan University '00, BM; University of Wisconsin Madison '02, MM; '05, DMA.

Knoke, Peter J.—1988—Associate Professor of Software Engineering (1988), CEM; Instructor of Computer Science, Distance Education, CDE/CRCD. Dartmouth College '55, BA; '56, MS; Syracuse University '68, PhD. P.E.

Koester, David C.—1999—Associate Professor of Anthropology (2003), CLA. Carleton College '79, BA; University of Chicago '84, MA; '90, PhD.

Kofinas, Gary P.—1996—Associate Professor of Resource Policy and Management (2007), SNRAS. University of North Carolina at Greensboro '75, BA; Antioch/New England Graduate School '78, MST; University of British Columbia '99, PhD.

Kohler, Pia M—2006—Assistant Professor of Political Science (2006), CLA. McGill University '98, BSc; Yale University '01, MES; Massachusetts Institute of Technology '06, PhD.

Konar, Brenda Helene—1999—Professor of Marine Science (2009), WCPR/SFOS. San Jose State University '86, BA; Moss Landing Marine Laboratories '91, MS; University of California, Santa Cruz '98, PhD.

Koskey, Michael Stephen—1995—Assistant Professor of Alaska Native Studies (2007), CLA. University of Central Florida '91, BA; '91, BS; Purdue University '93, MS; University of Alaska Fairbanks '03, PhD.

Kowalik, Zygmunt—1981—Professor of Marine Science (1989), IMS/SFOS. Moscow State University '61, MS; Institute of Water Eng., Polish Academy of Science, Gdansk '65, PhD.

Kramm, Gerhard—2001—Research Associate (2002), GI. Humboldt University of Berlin, PhD.

Kruse, Gordon H.—1994—Professor of Fisheries (2001), SFOS; President's Professor of Fisheries, JC/SFOS. Rutgers University '77, BS; Oregon State University '81, MS; '83, PhD.

Kuhn, Thomas Bernard—1998—Associate Professor of Chemistry & Biochemistry (2009), CNSM/IAB. University of Zurich, Switzerland '85, BS; '91, PhD.

Kuhns, Charles Mark—1978—Assistant Professor of Emergency Services (2004), CTC/CRCD. University of Alaska Fairbanks '85, AAS; University of Alaska Anchorage '11, BS.

Kuss, Herbert Patrick—1991—Instructor of Applied Business, CDE (1998), CDE/CRCD. University of San Francisco '70, BS; University of Pacific McGeorge '74, JD; University of Alaska Fairbanks '83, MBA.

LaCroix, Jacob J—2010—Postdoctoral Fellow (2010), SNRAS. University of Wisconsin Stevens Point '92, BS; Michigan Technological University '96, MS; University of Toledo '06, PhD.

LaForge, Shirley—2000—Assistant Professor of Nursing (2002), CTC/UAA. University of Washington '76, BS; University of Hawai'i Manoa '91, MS.

Lan, Ping—2002—Professor of Business Administration (2002), SOM; MBA Director (2008), SOM. Peking University, China '82, BS; University of Strathclyde, U.K. '95, PhD.

Lardon, Cecile Sabine Claudia—1999—Associate Professor of Psychology (2006), CLA. Depaul University '89, BA; University of Illinois at Chicago '95, MA; '99, PhD.

Larsen, Christopher F—1989—Research Assistant Professor (2006), GI. University of Alaska Fairbanks '91, BS; '03, PhD; University of California, Santa Cruz '96, MS.

Larsen, Jessica Faust—1997—Research Associate Professor of Volcanology (2006), GI. University of California, Santa Cruz '91, BS; '93, MS; '96, PhD.

Laughlin, Latrice Nichelle—1996—Instructor of Mathematics (2005), CNSM; Instructor of Mathematics, CDE (2000), CDE/CRCD. University of Alaska Fairbanks '99, AA; '99, BS; '02, MS.

Laursen, Gary A—1976—Director, Honors Program (2011), PROV; Adjunct Professor of Biology (2001), CNSM; Senior Research Associate (1996), IAB. Western Washington University '65, BA; University of Montana '70, MS; Virginia Polytechnic Institute and State University '75, PhD.

Lawlor, Orion Sky—1997—Assistant Professor of Computer Science (2005), CEM. University of Alaska Fairbanks '99, BS; University of Illinois at Urbana Champaign '01, MS; '05, PhD.

Layer, Paul W.—1989—Dean (2011), CNSM; Professor of Geophysics (2000), CNSM. Michigan State University '81, BS; Stanford University '84, MS; '86, PhD.

L'Ecuyer, Rosalie E.—1988—Instructor of English and History, CDE (2001), CDE/CRCD. Regis College, BA; Georgetown University, MA; University of Alaska Fairbanks '95, MA.

Lee, Jonah H.—1984—Professor of Mechanical Engineering (1994), CEM. Chung Yuan College '73, BS; South Dakota School of Mines and Technology '79, MS; Iowa State University '83, PhD.

Lee, Ming Sheng—2006—Assistant Professor of Civil Engineering (2006), CEM. National Taiwan University, Taipei '91, BS; Pennsylvania State University '96, MS; University of California, Irvine '01, PhD.

Leer, Jeffry A.—1976—Professor of Linguistics (2000), ANLC/CLA. Evergreen State College '76, BA; University of Chicago '89, MA; '91, PhD.

Lehman, Lisa M.—1987—Associate Professor of Library Science (1998), LIB. University of Michigan '73, BA; '74, MLS.

Leigh, Mary Beth—2006—Assistant Professor of Microbiology (2006), CNSM. University of Oklahoma, Norman '94, BFA; '97, MS; '03, PhD.

Leonard, Beth Robin—1991—Assistant Professor of Alaska Native Education (2007), SOE. University of Alaska Fairbanks '94, BA; '96, MEd; '07, PhD.

Leonard, Martin L—1998—Assistant Professor of Computers, Information and Office Systems (2004), KUC/CRCD; Program Manager, NSF Tribal Colleges and Universities Program (2004), KUC/CRCD. Indiana University of Pennsylvania '80, BS; Alaska Pacific University '02, MBA.

Lewis, Carol Elizabeth—1973—Dean (2002), SNRAS; Director, Agricultural and Forestry Experiment Station (2002), SNRAS. University of Florida '62, BS; '64, MS; Georgetown University '71, PhD; University of Alaska Fairbanks '76, MBA.

Lewis, Jordan Paul—2009—Research Associate (2011), CANHR/IAB. University of Alaska Fairbanks '99, BA; Washington University in St. Louis '99, MSW; University of Alaska Fairbanks '09, PhD.

Liang, Jingjing—2007—Assistant Professor of Forest Management, Director of Forest Growth and Yield Program (2007), SNRAS/AFES. Beijing University '01, BS; University of Wisconsin Madison '05, PhD.

Lieske, Camilla Louisa—2008—Postdoctoral Fellow (2008), IAB.

Lin, Chuen Sen—1990—Associate Professor of Mechanical Engineering (1997), CEM. National Taiwan University of Oceanic Science '72, BS; University of Hawai'i '78, MS; University of Minnesota '88, PhD.

Lin, Hsing Kuang—1986—Professor of Hydrometallurgy (1996), CEM. National Cheng Kung University '78, MS; University of Alaska Fairbanks '80, MS; University of Utah '85, PhD.

Lindberg, Mark S.—1990—Professor of Wildlife Biology/Ecology (2011), CNSM. Indiana University of Pennsylvania '85, BS; Cornell University '91, MS; University of Alaska Fairbanks '96, PhD.

Lipka, Jerry M.—1981—Professor of Education (1999), SNRAS. City College of New York '66, BBA; '69, MBA; University of Massachusetts, Amherst '80, EdD.

Little, Joseph M—2005—Assistant Professor of Economics (2005), SOM. University of Puget Sound '96, BA; University of Denver '00, MA; University of New Mexico '05, PhD.

Liu, Juanyu—2006—Assistant Professor of Civil Engineering (2006), CEM. Tongji University, Shanghai '95, BS; Texas A&M University '01, MS; '06, PhD.

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Lopez, Ellen D.S.—2009—Assistant Professor of Psychology (2009), CANHR/IAB/CLA. University of Wisconsin Madison '88, BA; University of Washington '96, MPH; University of North Carolina at Chapel Hill '02, PhD.

Lopez, Juan Andres—2008—Assistant Professor of Fisheries (2008), SFOS; Curator of Fish (2008), SFOS. University of Washington '98, MS; Iowa State University '03, PhD.

Lovecraft, Amy Lauren—2001—Associate Professor of Political Science (2008), CLA; Assistant Professor, CDE (2001), CDE/CRCD. Trinity University '94, BA; University of Texas at Austin '97, MA; '01, PhD.

Lowder, Marla K.—2004—Assistant Professor of Extension (2004), CES; 4 H and Youth Development Agent, Fairbanks Tanana District (2004), CES. Utah State University '92, BS; University of Idaho '99, MS.

Lower, Timothy Allen—2004—Assistant Professor of Psychology (2008), CLA. Sheldon Jackson College '95, AAS; '96, BS; Seattle University '98, MA; University of Alaska Fairbanks '08, PhD.

Luick, Bret Roger—1992—Associate Professor of Extension (2003), CES; Foods and Nutrition Specialist (1996), CES. University of Alaska Fairbanks '79, AAS; '79, BS; University of California, Davis '85, MS; Oregon State University '91, PhD.

Madsen, Eric Christopher—2003—Dean (2004), SOE; Associate Professor of Education (2003), SOE. Kalamazoo College '68, BA; University of Alaska Fairbanks '79, MAT; University of Oregon '83, PhD.

Magelky, Thane E—1998—Assistant Professor of Drafting Technology (2008), CTC/CRCD.

Mahoney, Andrew Richard—2010—Research Assistant Professor (2010), GI. University of East Anglia, United Kingdom '99, BSc; University of Alaska Fairbanks '06, PhD.

Maier, Julie Ann Kitchens—1998—Assistant Professor (2010), IAC/CRCD. Midwestern State University '84, BS; '86, MS; University of Alaska Fairbanks '96, PhD.

Makarevich, Roman—2011—Associate Professor of Physics (2011), CNSM/GI. St. Petersburg State University '93, BSc; '96, MSc; University of Saskatchewan '03, PhD.

Mamoon, Trina Rubaiya—1998—Associate Professor of Foreign Languages and Literatures (2005), CLA. People's Friendship University, Russia '84, MA; University of Illinois at Urbana Champaign '93, MA; '97, PhD.

Mann, Daniel Hamilton—1992—Assistant Professor of Geography (2008), SNRAS/AFES. University of Washington '75, BA; '78, MS; '83, PhD.

Manning, Kenneth—2006—Department Head (2006), CLA; Professor of Military Science (2006), CLA. East Tennessee State University '88, BS; Troy State University '01, MS.

Marchenko, Sergey S—2003—Term Research Associate Professor (2006), GI.

Marlow, Patrick E.—1995—Associate Professor of Linguistics (2009), ANLC/CLA. University of Wisconsin Madison '89, BA; University of Illinois at Urbana Champaign '91, MA; '97, PhD.

Marr, Maurice Wayne—2004—Professor (2004), SOM. Texas Tech University '77, BA; '80, MA; '83, PhD.

Marsik, Tomas—2004—Instructor (2007), CEM. University of Alaska Fairbanks '07, PhD.

Marx, Bethany C—2009—Assistant Professor of Theatre (2009), CLA. University of Evansville '04, BFA; University of Massachusetts, Amherst '07, MFA.

Mason, Charles W.—1990—Professor of Photojournalism and Photography (1999), CLA. Washington and Lee University '84, BS; Illinois State University '88, MS.

Mason, Gordon Joe—1990—Associate Professor (2001), NWC/CRCD; Instructor of Computer Information and Office Systems, CDE/CRCD. University of Notre Dame '74, BA; Iowa State University '89, MA.

Massa, James Richard—1998—Instructor of Mathematics (2000), CDE/CRCD. Wagner College '81, BS; Franklin Pierre College '89; University of Alaska Fairbanks '95, MS.

Mathis, Jeremy T—2007—Assistant Professor (2007), IMS/SFOS. McNeese State University '03, BS; University of Miami '06, PhD.

Mattacchione, AnneMarie—2000—Assistant Professor of Early Childhood Education (2010), CTC. University of Alaska Fairbanks '03, AAS; '10, BA.

Matusevich, Yelena—1998—Associate Professor of French (2002), CLA. Russian State University '89, MA; University of Oklahoma '93, MA; University of Illinois '98, PhD.

Maxwell, David A.—2004—Assistant Professor of Mathematics (2005), CNSM. University of Waterloo, Canada '95, BS; University of British Columbia '97, MSc; University of Washington '04, PhD.

Maxwell, Howard Evan—1987—Instructor of Anthropology, CDE (1990), CDE/CRCD. University of Minnesota, BA; University of Alaska Fairbanks '87, MA.

Mayer, Charles Edward—1989 - Professor of Electrical and Computer Engineering (1998), CEM; Associate Dean of Academics (2008), CEM. University of Texas at Austin '78, BS; '81, MSE; '83, PhD.

McBeath, Gerald A.—1976—Professor of Political Science (1982), CLA. University of Chicago '63, BA; '64, MA; University of California, Berkeley '70, PhD.

McBeath, Jenifer Huang—1977—Professor of Plant Pathology/Biotechnology (1992), SNRAS/AFES. National Taiwan University, Taipei '68, BS; University of California, Davis '70, MS; Rutgers University '74, PhD.

McCarthy, Paul H.—1964—Interim Director of Libraries (2010), LIB; Professor of Library Science and Director of Libraries, Emeritus. St. John Fisher College '62, BA; Syracuse University '64, MLS.

McCarthy, Paul Joseph—1999—Associate Professor of Geology (2005), CNSM. University of Western Ontario '86, BS; '89, MS; University of Guelph '95, PhD.

McClellan, Janet E—2007—Assistant Professor of Justice (2007), CLA. Park College '76, BA; University of Dayton '78, MPA; Northcentral University '08, PhD.

McConnell, Sarah S.—1993—Assistant Professor of Rural Human Services (2007), IAC/CRCD. University of Kentucky '72, BA; Loyola University Chicago '80, MSW.

McCracken, Kevin G.—2000—Associate Professor of Population Genetics (2006), CNSM. University of Notre Dame '94, BS; Louisiana State University '98, PhD.

McDermott, James Charles—2010—Instructor of Business Administration (2010), SOM. Wayland Baptist University '99, BS; University of LaVerne '01, MS.

McEachern, Diane Marie—2004—Assistant Professor of HUM and Coordinator of KuC Behavioral Health, KUC/CRCD. Southwest Missouri State University '84, BS; Arizona State University '98, MSW.

McGuire, A. David—1992—Professor of Landscape Ecology (2003), AKCFWRU/CNSM/IAB. Cornell University '76, BS; '77 M.Eng.; University of Alaska Fairbanks '83, MS, '89 PhD.

McInnis, Susan Elizabeth—1982—Instructor of English, CDE (2003), CDE/CRCD. University of Alaska Fairbanks '76, BA; '99, MFA.

McIntyre, Julie Pilar—1996—Assistant Professor of Statistics (2006), CNSM. Northwestern University '92, BA; University of Alaska Fairbanks '98, MS; North Carolina State University '03, PhD.

McKenna Trabant, Tonya Denise—1997—Adjunct Faculty (2005), CDE/CRCD. University of Alaska Fairbanks '99, BA; '04, MA.

McLean, Deborah L.—1993—Director, Bristol Bay Campus (2002), BBC/CRCD. St. Petersburg Jr. College '77, AS; University of South Florida '79, BA; Oklahoma State University '89, MS; Memphis State University '92, EdD; University of Alaska Fairbanks '09, AAS.

McNeely, Jason B—2010—Assistant Professor of Electrical and Computer Engineering (2010), CEM. University of Louisiana at Lafayette '01, BS; '03, MS; '10, PhD.

McNutt, Stephen R—1991—Research Professor of Volcano Seismology (1991), GI. Wesleyan University '77, BA; Columbia University '82, MA; '84, MPhil; '85, PhD.

McPhee, Megan V—2010—Assistant Professor of Fisheries (2010), JC/SFOS. University of Washington '96, BS; University of New Mexico '03, PhD.

Meath, Lawrence William—2005—Adjunct Assistant Professor of Education (2005), SOE. Oregon State University '71, BA; Northern Arizona University '75, MAT.

Mehner, Da Ka Xeen—2004—Assistant Professor of Native Arts (2008), CLA. Institute of American Indian Art '92, AA; University of New Mexico '03, BFA; University of Alaska Fairbanks '07, MFA.

Meier, Rose Antonia Zbinden—1997—Coordinator, Ethnobotany Program (2007), IAC/CRCD. Luther College '80, BSc; Northern Illinois University '84, MS; University of Minnesota '92, PhD.

Mellish, Jo Ann Elizabeth—2001—Research Associate Professor of Marine Science (2001), IMS/SFOS. Dalhousie University, Halifax, Nova Scotia '94, BS; '99, PhD.

Mendelowitz, Kade—1992—Professor of Theatre (2006), CLA; Lighting Designer, Technical Director (1992), CLA. State University of New York at New Paltz '88, BFA; Temple University '91, MFA.

Meritt, Patricia Anne—1997—Professor of Early Childhood Education (2006), CTC; Instructor of Early Childhood, CDE, CTC/CDE/CRCD. Sacramento City College '71, AA; California State University, Chico '73, BA; University of Alaska Fairbanks '84, MAT.

Metz, Paul Anthony—1975—Professor of Geological Engineering (2000), CEM. Michigan Tech University '68, BS; University of Alaska Anchorage '72, MBA; University of Alaska Fairbanks '75, MS; University of London '91, PhD.

Metzger, Andrew Thomas—2007—Assistant Professor (2007), CEM.

Meyer, Franz Josef—2007—Research Assistant Professor (2008), GI. Technical University of Munich, Germany '00; '04, PhD.

Meyer, Jennifer A—2007—Term Assistant Professor (2008), CRA.

Misra, Debasmita—2002—Associate Professor of Geological Engineering (2002), CEM. Orissa University, India '84, BS; Asian Institute of Technology, Bangkok '86, MS; University of Minnesota '94, PhD.

Mölders, Nicole—2001—Professor of Atmospheric Sciences (2006), GI; Department Chair (2005), CNSM. University of Cologne '83, BS; '88, MS; '92, PhD; University of Leipzig '99, Habilitation.

Mollett, David L.—1984—Associate Professor of Drawing (2007), CLA; Department Chair (2010), CLA. Reed College '75, BA.

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Mongrain, Joanna Claire—2004—Assistant Professor (2008), CEM. Oxford University '99, MChem; Heriot Waitt University, UK '00; University of Alaska Fairbanks '08, PhD.

Morotti, Allan A.—1995—Interim Dean (2011), SOE; Associate Professor of Education and Counseling (2002), SOE. California State University, Hayward '70, BA; University of Oregon '84, MS; '92, PhD.

Morrison, Joy F.—1990—Professor of Mass Communications (2003), CLA; Director, Office of Faculty Development (2004), PROV. New Mexico State University '83, BS; '85, MS; University of Iowa '91, PhD.

Morton, Donald J—2006—Research Professor (2009), ARSC; Visiting Research Scholar (2009), AFES. College of Great Falls Montana '89, BS; Louisiana State University '94, PhD.

Moses, Debra M.—1982—Associate Professor of Developmental Mathematics (2006), CTC/CRCD. Wheeling Jesuit University '74, BS; Fordham University '78, MA; University of Alaska Fairbanks '98, MS.

Motyka, Roman John—1997—Research Associate Professor (1998), GI. University of Alaska Fairbanks '83, PhD.

Mueter, Franz Josef—1988—Assistant Professor of Fisheries (2008), JC/SFOS. Rhino Westphalian Technical University, BS; University of Alaska Fairbanks '92, MS; '98, MS; '99, PhD.

Mulder, Christa P.H.—1991 - Associate Professor of Ecology (2006), CNSM; Department Chair (2010), CNSM. Bates College '88, BA; Queens University '91, MS; University of Alaska Fairbanks '96, PhD.

Murray, Maribeth S.—1998—Associate Professor of Anthropology (2004), CLA. Wilfrid Laurier University '89, BA; Memorial University of Newfoundland '92, MA; McMaster University '97, PhD.

Muskett, Reginald Reed—1999—Postdoctoral Fellow (2008), GI. University of Alaska Fairbanks '07, PhD.

Myers, Mark—2011—Vice Chancellor for Research (2011), CRS. University of Alaska Fairbanks '94, PhD.

Nakai, Taro—2009—Postdoctoral fellow (2009), IARC.

Nakazawa, Anthony T.—1981—Professor of Extension (1996), SNRAS. University of Hawai'i '71, BA; University of California, Santa Barbara '74, MA; University of California, Berkeley '76, MS; '79, PhD.

Nakoneczny, Michael M.—2000—Associate Professor of Art (2005), CLA. Cleveland State University '79, BFA; University of Cincinnati '81, MFA.

Nance, Kara Lynn—1993—Department Chair, Computer Science (2001), CEM; Professor of Computer Science (2001), CEM. University of Alaska Fairbanks '84, AA; '85, BT; University of Oklahoma '86, MS; '91, PhD.

Newberry, Rainer J.—1982—Professor of Geology (1992), CNSM. Massachusetts Institute of Technology '75, BS; '75, BS; Stanford University '78, MS; '80, PhD.

Newby, Gregory B.—2003—Chief Scientist (2007), ARSC; Research Associate Professor (2009), ARSC. State University of New York at Albany '87, BA; '88, MA; Syracuse University '93, PhD.

Newman, David E.—1998—Professor of Physics (2005), CNSM. University of Pittsburgh '83, BS; University of Wisconsin '93, PhD.

Ng, Chung Sang—2008—Associate Professor (2008), CNSM. Chinese University of Hong Kong '86, BS; '88, MPhil; Auburn University '94, PhD.

Nolan, Matthew A.—1990—Associate Research Professor (2004), WERC/INE. Carnegie Mellon University '88, BS; University of Alaska Anchorage '92, MS; University of Alaska Fairbanks '97, PhD.

Nolan, Suzanne K—2007—Term Assistant Professor (2007), IAC/CRCD.

Norcross, Brenda L.—1989—Professor of Marine Science (2001), IMS/SFOS. MacMurray College '71; St. Louis University '76, MS; College of William and Mary '83, PhD.

O'Brien, Diane Marie—2004—Associate Professor of Biology (2008), CNSM. Amherst College '91, BA; Princeton University '98, PhD.

O'Brien, Kristin Marie—2004—Associate Professor of Biology (2011), CNSM. Duke University '90, BS; University of Maine '99, PhD.

OConnor, Mary Deborah—2001—Adjunct Assistant Professor of Education, SOE. Creighton University '77, BA; '84, MA.

O'Donoghue, Brian Patrick—2001—Associate Professor of Journalism (2009), CLA; Department Chair (2009), CLA. University of California, Santa Cruz '77, BA; New York University '85, MA.

O'Hara, Todd Michael—2003—Associate Professor of Wildlife (2004), CNSM. Villanova University '83, BS; '85, MS; Medical College of Virginia '88, PhD; University of Wisconsin Madison '92, DVM.

Okkonen, Stephen R.—1997—Research Associate Professor of Marine Science (2000), SFOS. University of Michigan '76, BS; University of Alaska Fairbanks '93, PhD.

Oliveira, Alexandra CorreaMarquesde—2001—Associate Professor of Seafood Chemistry (2008), FITC/SFOS. Universidade Federal Fluminense Rio de Janeiro, Brazil '91, BS; Instituto Militar de Engenharia, Rio de Janeiro, Brazil '94, MS; University of Florida '00, PhD.

Olson, John V.—1979—Professor of Physics (1989), CNSM. University of California, Los Angeles '62, BA; '63, MS; '70, PhD.

Olson, Link Eric—2003—Curator of Mammals (2003), MUSEUM; Associate Professor of Systematic Biology (2008), CNSM. University of Michigan '92, BS; University of Chicago '99, PhD.

Olson, Matthew Scott—2001—Associate Professor of Biology (2006), CNSM. University of Texas '87, BA; Louisiana State University '92, MA; Duke University '97, PhD.

Osborn, Bruce F—2009—Assistant Professor of Welding Technology (2010), CTC.

Otto, Antonius—1992—Professor of Physics (2000), CNSM. Ruhr Universitat Bochum '83, Diploma; Ruhr Universitat Bochum '87, PhD.

Owens, Gregory J.—1986—Associate Professor of Mathematics (2003), CRCD. University of Wisconsin '78, BS; University of Alaska Fairbanks '91, MEd.

Palter, Morris S—2007—Assistant Professor of Music (2008), CLA. University of Toronto '93, BM; The Royal Conservatory The Hague '99, 1st Phase Artists Diploma; University of California, San Diego '00, MM; '05, DMA.

Panteleev, Gleb Glebovich—2001—Research Associate Professor (2008), IARC. Moscow Institute for Physics and Technology '83, BS; '85, MS; PP Shirshov Oceanological Institute '91, PhD.

Parr, Robert G—1998—Term Assistant Professor of Human Services (2004), CTC/CRCD. Mohegan Community College '77, AS; Oklahoma State University '80, BS.

Parson, Sean M—2010—Assistant Professor (2010), CLA. University of Oregon '10, PhD.

Patil, Shirish Liladhar—1983—Department Chair, CEM; Professor of Petroleum Engineering (2004), CEM. University of Poona '81, BE; University of Pittsburgh '83, MS; University of Alaska Fairbanks '87, MS; '95, MS; '07, PhD.

Patterson, Philip P—2010—Associate Professor (2010), SOE. California State University, Dominguez Hills '75, BA; '79, MA; University of Southern California '01, PhD.

Payne, Johnny—2011—Dean (2011), CLA.

Peng, Jifeng—2009—Assistant Professor (2009), CEM. University of Science and Technology of China '02, BS; Stony Brook University '04, MS; California Institute of Technology '09, PhD.

Perkins, Robert Allan—1996—Associate Professor of Civil and Environmental Engineering, CEM; Coordinator for Engineering Science Management (1999), CEM. Florida Atlantic University '72, BSE; University of Alaska Anchorage '78, MS; University of Alaska Fairbanks '83, MS; University of North Carolina '94, PhD. P.E.

Pete, Mary Ciuniq—2005—Director, Kuskokwim Campus (2005), KUC/CRCD. University of Alaska Fairbanks '79, BA; '84, MA.

Peterson, Donald T.—2001—Term Assistant Professor of Education (2003), SOE. University of Minnesota Duluth '70, BS; University of Alaska Fairbanks '96, MAT.

Peterson, Rorik Andrew—2000—Assistant Professor of Mechanical Engineering (2004), CEM. University of California, San Diego '94, BS; University of Colorado at Boulder '96, MS; '99, PhD.

Petrich, Christian—2006—Reseach Associate (2009), GI. University of Rostock '00; University of Otago, Dunedin (New Zealand) '05, PhD.

Pettit, Erin Christine—2008—Term Research Assistant Professor (2008), ESTES/CNSM. Brown University '94, ScB; University of Washington '03, PhD.

Ping, Chien Lu—1982—Professor of Soil Sciences (1993), SNRAS/AFES. Chung Hsin University, Taiwan '65, BSc; Washington State University '72, MS; '76, PhD.

Pinney, Peter P—1985—Associate Vice Chancellor of Rural, Community and Native Education (2004), CRCD; Professor of English (1998), CRCD. University of Hawai'i '80, BA; University of Alaska Fairbanks '88, MFA.

Pippenger, Michael K—1991—Associate Professor of Economics (1997), SOM. Ball State University '81, BS; University of Chicago '85, MA; Purdue University '87, MS; '90, PhD.

Pitney, Karen Pat—2008—Vice Chancellor of Administrative Services (2008), VCAS. University of Alaska Fairbanks '90, BBA.

Plattet, Patrick—2009—Assistant Professor, Anthropology (2009), CLA. University of Neuchatel, Switzerland '98, MA; '05, PhD.

Plumb, Veronica Marie—1997—Term Assistant Professor of Early Childhood Education (2006), CTC/CRCD. University of Alaska Fairbanks '94, AAS; '00, BA; University of Alaska Southeast '05, MEd.

Pnyushkov, Andrey Vasilievich—2009—Postdoctoral Fellow (2009), IARC.

Polasek, Lori Kay—2003—Research Assistant Professor (2003), IMS/SFOS. Texas A&M University '99, BS; '03, PhD.

Polyakov, Igor V.—1995—Research Professor (2003), IARC. Leningrad Hydrometeorological Institute '84, MS; Arctic and Antarctic Research Institute '90, PhD; St. Petersburg State University '92, MS; Russian State Hydrometeorological Institute '97, DSc.

Poole, John C.—1999—Vice Chancellor (2004), UADV. University of Massachusetts '75, BS; Pepperdine University '78, MA.

Post, William Dean—1999—Assistant Professor of Music (2008), CLA. Michigan State University '90, BMus; Western Washington University '94; Kent State University '07, PhD.

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Potter, Ben Austin—1997—Assistant Professor of Anthropology (2006), CLA. University of Alaska Fairbanks '97, MA; '05, PhD.

Powell, Abby N.—1997—Associate Professor of Wildlife Ecology (2000), AKCFWRU/CNSM/IAB; Assistant Leader (2000), AKCFWRU/CNSM/IAB. Cornell University '80, BS; San Diego State University '86, MS; University of Minnesota '92, PhD.

Prakash, Anupma—2002—Associate Professor of Geophysics (2002), CNSM. Indian Institute of Technology Roorkee '96, PhD.

Prato, Alba Ruth—2010—Instructor of Accounting (2010), SOM. Loma Linda University '90, BBA; Auburn University '91, MAcc.

Price, Barbara Deane—2009—Assistant Professor of Human Services (2009), CTC. College of Wooster '66, BA; University of Texas '69, MA; Dusquesne University '84, MS; Southern California University for Professional Studies '02.

Price, Channon P.—1987—Associate Professor of Physics (1993), CNSM. California Institute of Technology '76, BS; University of California, Santa Barbara '81, PhD.

Prince, Robert William—2005—Assistant Professor (2005), CLA. Calvin College '99, BA; Michigan State University '04, MA.

Quinn, Terrance J.—1985—Professor of Fisheries (Fish Population Dynamics) (1998), JC/SFOS. University of Colorado '73, BA; University of Washington '77, MS; '80, PhD.

Radenbaugh, Todd Alan—2006—Assistant Professor of Environmental Science (2006), BBC/CRCD. University of North Carolina at Wilmington '87, BS; Appalachian State University '92, MS; University of Regina '07, PhD.

Rader, Heidi Breana—2005—Term Assistant Professor of Extension and Agriculture and Horticulture Agent, Extension Indian Reservations Program, Tanana Chiefs Conference (2007), CES. University of Colorado at Boulder '02, BA; University of Alaska Fairbanks '06, MS.

RaLonde, Raymond L.—1991—Professor of Fisheries (1996), SFOS; Aquaculture Specialist (1991), MAP/SFOS. Oregon State University '69, BS; '72, BEd; University of Idaho '88, MS.

Raskovic, Dejan—2003—Associate Professor of Electrical and Computer Engineering (2010), CEM. University of Belgrade '93, BS; '96, MS; University of Alabama in Hunstville '03, PhD.

Rasley, Brian Timothy—1999—Assistant Professor of Chemistry & Distance Delivery (2005), CNSM. Arizona State University '81, BS; University of Alaska Fairbanks '90, MA; Georgetown University '98, PhD.

Rasmus, Stacy Michelle—2001—Assistant Research Professor (2009), CANHR/IAB. Western Washington University '99, BA; '01, MA; University of Alaska Fairbanks '08, PhD.

Reeve, Terence Alan—2004—Assistant Professor (2004), MAP/SFOS; Marine Extension Agent (2004), MAP/SFOS. University of Washington '65, BA; University of Alaska Fairbanks '10, MA.

Reilly, Terence J.—1996—Professor of English (2000), CLA. Colby College '75, BA; Nova University '82, MSEd; University of Miami '91, MA; '93, PhD.

Rencher, Brian Keith—2006—Assistant Professor of Diesel/Heavy Equipment/Welding (2006), CTC/CRCD.

Renes, Susan L—2007—Assistant Professor of Education (2007), SOE. University of Idaho '77, BS; '77, BS; Capella University '03, MS; '08, PhD.

Reynolds, Douglas Bradford—1997—Associate Professor of Economics (2002), SOM. Colorado State University '84, BS; University of New Mexico '91, MA; '94, PhD.

Reynolds, Jennifer Robin—2000—Associate Professor of Marine Science (2009), SFOS; Associate Director, WCPRURC (2009), GURU/SFOS. Dartmouth College '85, BS; Columbia University '90, MA; '95, PhD.

Rhodes, John A—2005—Associate Professor of Mathematics (2005), CNSM. Dartmouth College '82, BA; Massachusetts Institute of Technology '86, PhD.

Rice, Allison A—1998—Associate Professor (2010), MAP/SFOS. Oberlin College '93, BA; University of Alaska Southeast '04, MPA.

Rickard, Anthony D.—2003—Professor of Mathematics Education (2008), CNSM. University of Alaska Fairbanks '87, BS; '89, MAT; Michigan State University '93, PhD.

Riley, Julie A—1984—Professor of Extension (2007), CES; Horticulture Agent, Anchorage District (1984), CES. University of Wisconsin Madison '77, BS; '80, MS.

Rivkin, Inna D—2007—Assistant Professor of Psychology (2007), CLA. University of California, Berkeley '93, BA; University of California, Los Angeles '00, PhD.

Roberts, Andrew Frank—2004—Postdoctoral Fellow (2007), ARSC.

Roberts, Larry N.—1984—Assistant Professor of Human Services/Rural Human Service (2003), KUC/CRCD; Coordinator of Behavioral Health Program, KUC/CRCD. Texas Christian University '77, MEd.

Roddey, Michael T—2009—Assistant Professor of Culinary Arts (2009), CTC. Peru State College '06, BS; '08, MS.

Roehl, Roy Frederic—1998—Assistant Professor of Education (2007), SOE. University of Alaska Fairbanks '73, AA; '93, BEd; '96, MEd; '10, PhD.

Rogers, Brian D.—2008—Chancellor (2008), CHANC. Harvard University '84, MPA.

Romanovsky, Vladimir E.—1992—Professor of Geophysics (2006), GI. Moscow State University '75, MS; '82, PhD; '85, MS; University of Alaska Fairbanks '96, PhD.

Rosenberg, Jonathan—1993—Professor of Political Science (2007), CLA. Pennsylvania State University '80, BA; University of California, Los Angeles '81, MA; '92, PhD.

Rosenberger, Amanda Elizabeth—2006—Assistant Professor of Fisheries (2006), SFOS. Simon's Rock College of Bard '94, BA; University of Florida '97, MS; Virginia Polytechnic Institute and State University '02, PhD.

Ross, Betty M E—2011—Instructor of Business Administration (2011), SOM. Granite State College '97, BS; Southern New Hampshire University '98, MBA; Nova Southeastern University '02, DBA.

Rowell, Janice E.—1989—Assistant Professor Animal Science (2009), SNRAS/AFES. University of Victoria, Canada '75, BSc; University of Ottawa '80, MSc; University of Saskatchewan '90, PhD.

Ruess, Diane E.—1989—Associate Professor of Library Science (1997), LIB. University of North Dakota '75, BS; University of Washington '79, MLS.

Ruess, Roger W.—1989—Professor of Botany (2001), CNSM; Associate Director (2001), IAB. University of California, Irvine '74, BS; University of North Dakota '80, PhD.

Runstadler, Jonathan A—2004—Associate Professor of Biology (2010), CNSM. Stanford University '89, BS; University of New Hampshire '92, MS; University of California, Davis '99, DVM; '03, PhD.

Rupp, Terry Scott—1993—Professor of Forestry (2010), SNRAS. Pennsylvania State University '93, BS; University of Alaska Fairbanks '98, PhD.

Ruppert, James K.—1988—President's Professor of Alaska Native Studies (2003), CLA. State University of New York '70, BA; Purdue University '72, MA; University of New Mexico '81, PhD.

Rutledge, Michael William—2007—Instructor of Developmental Studies (2007), NWC/CRCD. University of Idaho '87, BA; Boise State University '05, MA.

Rybkin, Alexei—1998—Professor of Mathematics, CDE (2005), CNSM. St. Petersburg University, Russia '82, MS; '85, PhD.

Sager, Kevin—2010—Term Professor (2010), CLA. University of Wisconsin Madison '91, BS; Indiana University '95, MSEd; University of Washington '02, PhD.

Saito, Kazuyuki—2007—Affiliated Research Scientist (2010), IARC.

Salganek, Elinor Maya—2001—Term Assistant Professor (2007), CLA. University of New Mexico '98, BFA; University of Alaska Fairbanks '07, MA.

Salmon, Cindy Jane—1999—Instructor of Health, CDE (2000), CDE/CRCD. Northern Arizona University '93.

Salvador, Deseree L—2009—Assistant Professor of Developmental English (2009), CTC. University of California, Davis '88, BA; York University '96, MA.

Sassen, Kenneth—2002—Professor of Atmospheric Sciences (2002), GI. New York University '70, BS; '73, MS; University of Wyoming '76, PhD.

Schell, Jennifer Hope—2009—Assistant Professor (2009), CLA. Emory University '96, BA; University of Georgia '98, MA; University of Pittsburgh '06, PhD.

Schichnes, Janet C.—1994—Undergraduate Advisor and Practicum Supervisor (2005), CLA. Rutgers University '70, BA; Harvard University '81, EdM.

Schiewer, Silke—2001—Associate Professor of Civil and Environmental Engineering (2006), CEM. Technische Universitat Braunschweig, Germany '93, MS; McGill University '96, PhD.

Schlutt, E. Frederick—2009—Vice Provost of Outreach and Director (2009), CES. Texas A&M University '76, BS; '79, MS; '87, PhD.

Schmidt, Jennifer I—2002—Postdoctoral Fellow (2007), IAB. University of Alaska Fairbanks '07, PhD.

Schnabel, William E—1996—Term Research Assistant Professor (2007), CEM. University of Alaska Fairbanks '00, PhD.

Scholl, David W—2006—Co Chapman Chair (2006), CNSM. University of Southern California '56, BS; '58, MS; Stanford University '62, PhD.

Schulte, Marvin Kenneth—2004—Associate Professor of Neurotoxicology (2004), CNSM. St. John's University '82, BS; University of Minnesota '89, MS; '92, PhD.

Seitz, Andrew Christopher—2006—Assistant Professor of Fisheries (2008), JC/SFOS. Cornell University '97, BS; University of Alaska Fairbanks '06, PhD.

Semiletov, Igor Petrovich—2001—Research Associate Professor (2004), IARC. Far Eastern State University '77, BS; PP Shirshov Oceanological Institute '87, MS; '95, PhD.

Sfraga, Michael—1982—Vice Chancellor (2010), SS; Associate Dean (2008), SNRAS. University of Alaska Fairbanks '84, BS; '97, PhD; Bowling Green State University '86, MA.

Shakhova, Natalia Yevgenyevna—2004—Research Assistant Professor (2009), IARC. Vladivostok Medical University '82, MS; Russian Academy of Sciences '93, PhD; PP Shirshov Oceanological Institute '10, DSc.

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Shallcross, Leslie Ann—2006—Assistant Professor of Extension (2006), CES; Health, Home and Family Development Agent, Anchorage District, CES. Pennsylvania State University '78, BS; '92, MS.

Sharpton, Virgil L.—1998—President's Professor of Remote Sensing (2001), GI. Grand Valley State University '79, BS; Brown University '81, MSc; '84, PhD.

Sheane, Susan Diane—1995—Instructor of Women's Studies, CDE (2002), CDE/CRCD. University of Lethbridge '95, BA; University of Alaska Fairbanks '97, MA.

Sheffield, Gay G.—2011—Assistant Professor (2011), MAP/SFOS. University of Alaska Fairbanks '97, MS.

Sheppard, Dani' Karole—1999—Associate Professor of Psychology (2004), CLA. Virginia Polytechnic Institute and State University '88, BS; George Mason University '95, MA; '96, PhD.

Sherman, Todd L.—1986—Professor of Art (1998), CLA. University of Alaska Fairbanks '79, BA; Pratt Institute '85, MFA.

Shipka, Milan Paul—1999—Professor of Animal Sciences (2007), SNRAS/AFES/CES; Associate Director, Agricultural and Forestry Experiment Station, CES. University of Minnesota '83, BS; Iowa State University '91, MS; Utah State University '96, PhD.

Short, Margaret B—2006—Assistant Professor of Statistics (2006), CNSM. California Institute of Technology '82, BS; University of Minnesota '98, MS; '00, MS; '03, PhD.

Shur, Yuri—2001—Associate Professor of Environmental Engineering (2001), CEM. Moscow State University for Civil Engineering '59, MS; Institute of Foundations and Underground Structure '68, PhD; Institute of Hydrogeology and Engineering Geology '88, DSc.

Sicoli, Mark A—2010—Assistant Professor (2010), CLA. University of California, Santa Cruz '95, BA; University of Pittsburgh '99, MA; University of Michigan '07, PhD.

Siekmann, Sabine—2005—Assistant Professor of Linguistics and Foreign Languages (2005), CLA. Idaho State University '97, BA; '99, MA; University of South Florida '04, PhD.

Sikes, Derek S—2006—Curator of Insects (2006), MUSEUM; Assistant Professor of Entomology (2006), CNSM. University of California, Santa Cruz '92, BA; Montana State University '94, MA; University of Connecticut '03, PhD.

Sikorski, Kathy R.—1990—Instructor of Gwich'in (2002), ANLC/CLA. University of Alaska Anchorage '87, AAS; University of Alaska Fairbanks '00, BA; '08, MEd.

Simmons, Harper L.—1994—Associate Professor (2008), IMS/SFOS. University of Alaska Fairbanks '93, BS; '96, MS; Florida State University '00, PhD.

Simmons, Teisha Marie—1999—Assistant Professor of Rural Human Services (2006), IAC/CRCD. University of Alaska Fairbanks '00, BA; '03, MA.

Simpson, William Robert—1996—Professor of Chemistry (2008), CNSM. Swarthmore College '88, BA; Stanford University '95, PhD.

Skewes, Monica C—2009—Assistant Professor of Psychology (2009), CLA; Assistant Professor of Psycholgoy (2009), CANHR/IAB. University of California, Davis '96, BA; University of Texas at El Paso '02, MA; '06, PhD.

Skya, Walter A—2009—Assistant Professor of History (2010), CLA. University of Washington '71, BA; University of Chicago '87, MA; '94, PhD.

Smeenk, Peter Jeffrey—2004—Assistant Professor of Horticulture and Horticulture Extension Specialist (2004), SNRAS/AFES/CES. Michigan State University '82, BS; '03, PhD; Pennsylvania State University '92, MAgr.

Smiley, Scott T.—1989—Associate Professor of Biology (1994), FITC/SFOS. University of California, Berkeley '79, BA; University of Washington '84, MS; '86, PhD.

Smith, Anthony L—2008—Assistant Professor of Military Science (2008), CLA. Central Texas College, AA.

Snifka, Lynne Marie—1997—Assistant Professor of Journalism (2006), CLA. University of Wisconsin '93, BA; University of Alaska Fairbanks '09, MA.

Snyder, Darren G.—2008—Assistant Professor of Extension (2008), CES; 4 H Youth Development Agent/Agriculture and Horticulture Agent, Juneau District, CES. University of Hawai'i Hilo '93, BS; University of Alaska Southeast '01, MAT.

Sodt, Jill Marie—2005—Adjunct Faculty (2005), CDE/CRCD. Western Illinois University, BA; University of Missouri, MA.

Solie, Daniel John—1997—Term Assistant Professor of Science Education (2003), CNSM. University of Alaska Fairbanks '82, BS; Virginia Polytechnic Institute and State University '91, PhD.

Sonwalkar, Vikas S.—1995—Professor of Electrical and Computer Engineering (2000), INE. Indian Institute of Technology, India '76, BT; University of Rochester '78, MS; Stanford University '86, PhD.

Sorensen, Fred E.—1987—Professor of Extension (2004), CES; Natural Resources and Community Development Agent, Anchorage District (1984), CES. University of California '74, BA; Moss Landing Marine Laboratories '84, MS.

Sorensen, Kathleen Ann—1995—Instructor of Mathematics (2000), CNSM. Macalester College '89, BA; University of Alaska Fairbanks '97, MS.

Soria, Juan Andres—2006—Assistant Professor of Wood Chemistry (2007), SNRAS. Ball State University '95, BS; Baylor University '98, MS; University of Idaho '05, PhD.

Spaleta, Jeffrey D—2007—Postdoctoral Fellow (2007), GI.

Sparks, Howard Charles—1993—Associate Professor of Accounting (2000), SOM; C.P.A.. University of Alaska Fairbanks '87, BBA; University of Iowa '89, MA; '96, PhD.

Sparrow, Elena B.—1986—Professor of Resources Management (2008), IARC; Education Outreach Director (2006), SNRAS. University of the Philippines '62, BS; Cornell University '66, MS; Colorado State University '73, PhD.

Sparrow, Stephen D.—1981—Associate Dean (2003), SNRAS; Professor of Agronomy (1993), SNRAS/AFES. North Carolina State University '69, BS; Colorado State University '73, MS; University of Minnesota '81, PhD.

Springer, Alan Matthew—1983—Research Professor (2008), IMS/SFOS. Colorado College '69, BA; University of Alaska Fairbanks '74, MS; '88, PhD.

Stanley, Sarah Elizabeth—2010—Composition Director (2010), CLA. Creighton University '03, BA; University of Kansas '05, MA; University of Massachusetts, Amherst '10, PhD.

Stephens, Sidney A.—1983—Instructor of Science Education (2000), SNRAS/AFES. California Polytechnic State University '71, BS; University of Alaska Fairbanks '86, MEd.

Stephens, Stephen Wayne—1988—Term Assistant Professor of Electrical Engineering (1996), CEM. University of Alaska Fairbanks '92, BS; '96, MEE; '96, MEng.

Stewart, Kimberly—1991—Instructor of Spanish (1999), CLA; Instructor of Linguistics, CDE (2002), CDE/CRCD. University of Alaska Fairbanks '91, BA; '94, MEd.

Stockwell, Dean Alan—1998—Research Associate Professor (2008), IMS/SFOS. Humboldt State University '72, BS; Texas A&M University '82, MS; University of Rhode Island '87, PhD.

Stortz, Peter John—1989—Professor of Extension (2004), CES; Fisheries and Natural Resources Specialist (1994), CES. University of Wisconsin Stevens Point '76, BS; '78, MS.

Strange, Anthony T.—1991—Assistant Professor of Education and Counseling (2003), SOE. Chapman University '83, BA; '84, BS; University of LaVerne '89; University of Southern California '99, EdD.

Strohmaier, Mahla—1986—Assistant Professor of Academic Programs (2008), CTC/CRCD. University of Alaska Fairbanks '87, BA; University of North Texas '88, MS; Purdue University '97, PhD.

Stuefer, Martin—2001—Research Assistant Professor (2002), GI.

Stuefer, Svetlana L—2003—Research Assistant Professor (2005), INE. Russian State Hydrometeorological Institute '99, MSc; '02, PhD.

Sutton, Trent M—2006—Associate Professor of Fisheries (2007), SFOS. Michigan State University '91, BSc; Michigan Technological University '93, MSc; Virginia Polytechnic Institute and State University '97, PhD.

Swarner, Keith M.—1987—Associate Professor of Computer and Information Sciences (2005), CTC/CRCD. University of Alaska Fairbanks '92, BBA.

Swisher, Kimberly Chase—2010—Practicum Director/Clinical Assistant Professor (2010), CLA. University of Alaska Fairbanks '96, BA; University of Alaska Anchorage '00, MSW.

Szuberla, Curt Albert—1992—Assistant Professor of Physics (2005), CNSM. United States Military Academy '86, BS; University of Alaska Fairbanks '97, PhD.

Taguchi, Elizabeth Livesey—1998—Instructor/Adult Basic Education, Developmental English (1998), KUC/CRCD. Connecticut College '66, BA.

Takebayashi, Naoki—2003—Associate Professor of Evolutionary Biology (2009), CNSM. Kyushu University '91, BS; Indiana University '00, PhD.

Tannehill, Linda Kay—1993—Professor of Extension (2005), CES; Health, Home and Family Development Agent/4 H and Youth Development Agent, Kenai Peninsula District (1999), CES. Kansas State University '82, BS; '88, MS.

Tape, Carl H—1999—Assistant Professor of Geophysics (2010), CNSM/GI. Carleton College '01, BA; University of Oxford '03, MS; California Institute of Technology '09, PhD.

Taylor, Barbara Elan—2003—Assistant Professor of Biology (2004), CNSM. University of British Columbia '87, BS; '90, MS; '97, PhD.

Taylor, Donald Lee—2002—Associate Professor of Biology (2008), CNSM/IAB. Yale University '89, BS; University of Florida '90, BS; University of California, Berkeley '97, PhD.

Taylor, Karen Michelle—2008—Assistant Professor of Communication (2008), CLA. Tulane University '93, BA; Texas A&M University '96, MA; University of Pittsburgh '03, Certification in Philosophy of History & Science.

Taylor, Mark Lawrence—2007—Research Assistant Professor (2007), CEM. University of Alaska Fairbanks '02, MCE.

Taylor, Richard William—2002—Assistant Professor of Computer Applications (2002), KUC/CRCD. Southwest Texas State University '72, BS; University of Virginia '76, MS.

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Thibodeau, Michael J.—1986—Temporary Faculty Credit (2011), CDE/CRCD. St. Lawrence University '73, BA; University of Alaska Fairbanks '86, MA; Florida State University '93, PhD.

Thomas, Amber Flora—2006—Assistant Professor of English (2006), CLA. Humboldt State University '94, BA; Washington University '98, MFA.

Thomas, Dana Lester—1981—Vice Provost and Accreditation Liaison Officer (2009), PROV; Professor of Statistics, CNSM. University of Alaska Fairbanks '74, BS; Oregon State University '78, MS; '82, PhD.

Thompson, Joseph C.—1999—Assistant Professor of Philosophy and Humanities (2005), CLA. State University of New York at Binghamton '91, BA; University of Illinois at Urbana Champaign '94, MA; '02, PhD.

Thorsen, Denise Lorraine—2000—Associate Professor of Electrical and Computer Engineering (2008), CEM; Director, Alaska Space Grant Program (2008), CEM. University of Illinois at Urbana Champaign '85, BS; '91, MS; '96, PhD.

Thresher, Duane E—2008—Postdoctoral Fellow (2008), ARSC.

Titus, Jordan J.—1990—Associate Professor of Sociology (2001), CLA; Department Chair (2001), CLA. Acadia University '77, BA; '79, BA; University of Toronto '83, MA; '90, PhD.

Tivy, Adrienne C—1999—Postdoctoral Fellow (2009), IARC. University of Alaska Fairbanks '01, MS; University of Calgary, Canada '09, PhD.

Todd, Susan K—1990—Associate Professor (2002), SNRAS/AFES. Bryn Mawr College '75, BA; University of Michigan '79; '95, PhD.

Tolbert, Judith May—1997—Adjunct Assistant Professor of Education (1997), SOE. Macalester College '65, BA; University of Alaska Fairbanks '74, MEd.

Toniolo, Horacio Antonio—2003—Assistant Professor of Civil and Environmental Engineering (2003), CEM. Universidad Nacional del Litoral, Argentina '91, BS; '99, MS; University of Minnesota '02, PhD.

Trainor, Sarah F—2003—Research Assistant Professor (2006), INE. Mount Holyoke College '92, BA; University of California, Berkeley '98, MA; '02, PhD.

Trainor, Thomas Patrick—2003—Associate Professor of Chemistry (2008), CNSM. Colorado School of Mines '95, BS; Stanford University '01, PhD.

Trish, Sharon Ruth—2003—Term Assistant Professor of Early Childhood Education (2003), KUC/CRCD. Sonoma State University '75, BA.

Truffer, Martin—1995—Associate Professor of Physics (2006), GI. ETH Zurich, Switzerland '95, Diploma; University of Alaska Fairbanks '99, PhD.

Tuttle, Siri G.—2003—Associate Professor of Linguistics (2010), ANLC/CLA. University of Washington '90, MA; '98, PhD.

Updegrove, William Walter—2002—Instructor of Adult Basic Education (2002), KUC/CRCD. University of Michigan '67, BA; University of Wisconsin '70, MA; North Park Theological Seminary '81, MDiv.

Valentine, David W.—1996—Professor of Forest Soils (2010), SNRAS/AFES. Wittenberg University '81, BA; Duke University '84, MS; '90, PhD.

Vandelden, Kari Lynn—2004—Assistant Professor of Extension (2004), CES. Western Washington University '91, BA; '95, ME.

VanLaningham, Samuel J—2009—Assistant Professor (2009), IMS/SFOS. Central Washington University '99, BS; Oregon State University '03, MS; '07, PhD.

Veazey, David A—1999—Instructor (2008), SNRAS; Director, Enrollment Management (2008), SNRAS. California Polytechnic State University '87, BS; University of Alaska Fairbanks '93, MS; University of Pennsylvania '06, EdD.

Verbyla, David L.—1993—Professor of Geographic Information Systems (2002), SNRAS/AFES. Rutgers University '79, BS; Michigan State University '82, MS; Utah State University '88, PhD.

Via, Warren W.—2003—Instructor (2007), SOE; Oberlin College '74, AB; University of Washington '78, MEd.

Wackerbauer, Renate Anna—2001—Assistant Professor of Physics (2001), CNSM. Technical University '90, Diploma; Max Planck Institute for Extraterrestrial Physics '95, PhD.

Wagner, Diane—2002—Associate Professor of Biology (2006), CNSM. University of California, Berkeley '86, BA; Princeton University '94, PhD.

Walker, Donald Arthur—1999—Professor of Geobotany (2001), CNSM. University of Colorado at Boulder '72, BA; '77, MA; '81, PhD.

Wall, Sherri Lynn—2002—Term Instructor (2006), SOM. University of Alaska Fairbanks '02, BT; '05, MS.

Wallace, Wesley K.—1985—Professor of Geology (1995), CNSM. Rice University '72, BA; University of Washington '76, MS; '81, PhD.

Walsh, Daniel Edward—1982—Professor of Mineral Preparation Engineering (1999), CEM. University of Alaska Fairbanks '81, BS; '85, MS. P.E.

Walsh, John Edward—2001—President's Professor of Global Climate Change and Chief Scientist (2001), IARC; Director (2004), CGC/CIFAR. Dartmouth College '70, BS; Massachusetts Institute of Technology '74, PhD.

Walter Anthony, Katey Marion—1996—Research Assistant Professor (2007), CEM. University of Alaska Fairbanks '06, PhD.

Watabe, Junichiro—2006—Assistant Professor of Music (2009), CLA. Igaichi University of Music and Fine Arts '00, BA; University of Northern Colorado '08.

Watanabe, Eiji—2008—Research Scholar (2008), IARC.

Weber, Jane Mathias—1986—Associate Professor of Developmental Mathematics (2003), CRCD; Department Chair (2003), CRCD. University of Alaska Fairbanks '88, BS; '91, MS.

Webley, Peter William—2005—Postdoctoral Fellow (2005), ARSC. University of East Anglia '97, BS; '98, MSC; University of Reading, U.K. '03, PhD.

Weggel, Roger F—1996—Assistant Professor of Airframe and Power Plant Maintenance (2005), CTC/CRCD. Millersville State College '76, BA; University of Alaska Fairbanks '00, Certificate.

Weingartner, Thomas J.—1988—Professor of Marine Science (1999), IMS/SFOS. Cornell University '74, BS; University of Alaska Fairbanks '80, MS; North Carolina State University '89, PhD.

West, Michael E.—2004—Research Assistant Professor of Volcano Seismology (2004), GI. Colorado College '93, BA; Columbia University '01, PhD.

Whalen, Michael T.—1995—Associate Professor of Geology (2001), CNSM; Department Co Chair, Geology and Geophysics (2003), CNSM. Rutgers University '82, BA; University of Montana '85, MS; Syracuse University '93, PhD.

Wheat, Charles Geoffrey—1994—Research Professor of Marine Science (2004), WCPR/SFOS; Regional Coordinator (2006), GURU/SFOS. University of New Hampshire '83, BS; University of Washington '86, MS; '90, PhD.

Whipple, Jason Lee—2008—Associate Professor of Psychology (2010), CLA; Director, Psychology Department Clinic (2010), CLA. Brigham Young University '99, BS; '03, PhD; Aliant International University '07, MS.

Whitaker, Keith—2010—Instructor (2010), CEM. University of Rhode Island '86, BCE; University of Maine '06, JD. P.E.

White, Daniel M.—1993—Director, Institute of Northern Engineering (2006), INE; Professor of Civil and Environmental Engineering, CEM. Colorado College '90, BA; Washington State University '91, BS; University of Notre Dame '95, PhD. P.E.

Whitener, Susan—2011—Dean, Community and Technical College (2011), CTC/CRCD.

Whitledge, Terry Eugene—1998—Professor of Marine Science (1998), SFOS; Director, Institute of Marine Science (2005), IMS/SFOS. Western Illinois University '64, BS; '66, MS; University of Washington '72, PhD.

Wies, Richard W.—1999—Associate Professor of Electrical and Computer Engineering (2006), CEM. University of Wyoming '92, BS; '95, MS; '99, PhD.

Wildfeuer, Sandra June—1998—Term Assistant Professor of Mathematics (2005), CRCD. Indiana University '91, BA; Purdue University '96, MS.

Wilner, Eduardo Mario—1999—Associate Professor of Philosophy (2006), CLA; Associate Professor of Biology and Wildlife (2006), CLA. University of Manitoba '88, MSc; University of Guelph '90, MA; '95, PhD.

Wilson, Timothy D.—2005—Assistant Professor of Languages and Literature (2005), CLA. Northern Illinois University '90, BA; University of Illinois '95, MA; '05, PhD.

Winfree, Cathleen Maureen—1995—Term Assistant Professor of Allied Health (2003), CTC/CRCD. University of Oregon '78, BS. RN

Winker, Kevin Sean—1997—Curator of Birds (1997), MUSEUM; Professor of Biology (2007), CNSM. University of Minnesota '84, BA; '84, BS; '88, MS; '91, PhD.

Winsor, Peter Rolf—2008—Associate Professor (2008), IMS/SFOS. Komvux Goteborg '93, BA; Goteborg University '97, BS; '02, PhD.

Wipfli, Mark S.—2004—Associate Professor of Fisheries (2004), SFOS; Assistant Leader (2004), AKCFWRU/CNSM/SFOS/IAB. University of Wisconsin '84, BS; '87, MS; Michigan State University '92, PhD.

Wisen, Craig H.—2002—Associate Professor of Business Administration (2007), SOM. University of North Carolina '87, BA; Indiana University '89, MBA; '02, PhD.

Wolf, Diana Ellen—2003—Associate Professor of Biology (2009), CNSM. College of Wooster '93, BS; Indiana University '00, PhD.

Wolf, Sherry Lynne—2006—Term Assistant Professor of Allied Health (2009), CTC. University of Alaska Anchorage '90, BS.

Wolken, Jane Margaret—2010—Postdoctoral Fellow (2010), SNRAS. Lakehead University '00; University of Alberta, Canada '02, MSc; '08, PhD.

Wong, Nga Wing Anjela—2010—Assistant Professor (2010), SOE. San Francisco State University '03, BA; University of Wisconsin Madison '05, MA; '08, PhD.

Wooller, Matthew John—2002—Associate Professor of Marine Science (2002), IMS/SFOS. Worcester University, UK '93, BS; University of Wales Bangor, U.K. '95, MS; University of Wales Swansea, U.K. '99, PhD.

Wright, Miranda H.—1993—Director, DANSRD/CRCD. University of Alaska Fairbanks '88, AAS; '92, BA; '95, MA.

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Wynne, Kathleen M.—1988—Professor of Marine Biology (2006), MAP/SFOS. University of Idaho '77, BS; '81, MS.

Yarie, John A.—1978—Director, Forest Soils Laboratory (1996), SNRAS; Professor of Silviculture (1997), SNRAS/AFES. West Virginia University '71, BS; University of Maine '74, MS; University of British Columbia '78, PhD.

Yoshikawa, Kenji—1997—Research Associate Professor of Water Resources (2005), WERC/INE. University of the Ryukyus, Japan '86, BE; Hokkaido University '90, MS; '97, PhD.

Yuan, Fengming—2008—Postdoctoral Fellow (2008), IAB.

Zhang, Hui—2010—Assistant Professor of Physics (2010), CNSM/GI. Peking University, China '02, BA; Boston University '04, MA; '08, PhD.

Zhang, Jing—2005—Assistant Professor of Mechanical Engineering (2005), CEM. University of Science and Technology Beijing '96, BS; Beijing University of Aeronautics and Astronautics '99, MS; Drexel University '04, PhD.

Zhang, Mingchu—2003—Associate Professor of Agronomy/Soil Sciences (2008), SNRAS/AFES. Agricultural University of Central China '81, BS; University of Alberta, Canada '87, MS; '93, PhD.

Zhang, Xiangdong—2004—Research Associate Professor (2007), IARC. Nanjing Institute of Meteorology '83, BS; Nanjing University '93, PhD.

Zhang, Xiong—2006—Assistant Professor of Civil Engineering (2006), CEM. Tongji University, Shanghai '92, BS; China Institute of Water Resources and Hydropower Research '95, MS; Texas A&M University '04, DPhil.

Zhou, Mo—2008—Assistant Professor (2008), SOM. Beijing Forestry University '98, BS; Technical University of Munich, Germany '01, MS; University of Wisconsin Madison '05, PhD.

Zhou, Xiyu—2003—Assistant Professor of Business Administration (2003), SOM. Jiaotong University, Shanghai '90, BE; China Europe International Business School, Shanghai '96, MBA; Universite de Lausanne, Switzerland '99, MS; University of North Carolina at Chapel Hill '04, PhD.

Zilberkant, Eduard—1997—President's Professor of Fine Arts (2005), CLA; Director, Fairbanks Symphony Orchestra (2001), CLA. Bowling Green State University '87, BM; '89, MM; Freiburg Musik Hochschule '91, Diploma; Temple University '96, DMA.

Zinger, Natalia Dmitry—2001—Term Assistant Professor (2006), BB/CRCD.

Zinger, Victor A—2002—Assistant Professor of Mathematics and Natural Science (2005), BBC/CRCD. Makorov Engineering Marine Academy '74, BS; '75, MS; Hertzen Russian State Pedagogical University '81, BS; '83, MS; '03, PhD.

EMERITI

Akasofu, Syun-Ichi, Professor of Physics and Director, Emeritus. Tohoku University '53, BS; '57, MS; University of Alaska Fairbanks, '61, PhD. (1958 – 2007)

Alexander, Barbara F., Associate Professor of Art History and Humanities, Emerita. University of Zurich, Switzerland '75, PhD. (1977 – 1999).

Alexander, Vera, Dean and Professor of Marine Science, Emerita. University of Wisconsin '55, BA; '62, MS; University of Alaska Fairbanks '65, PhD. (1965 – 2005).

Andresen, Patricia A., Director of UAF Honors Program, Emeritus. University of Illinois '55, BS; University of Missouri '58, MA; University of California, Santa Barbara '76, PhD. (1960 – 1993). Deceased.

Arundale, Robert B., Professor of Communications, Emeritus. Rensselaer Polytechnic Institute '63, BS; '64, MS; Michigan State University '71, PhD. (1979 – 2011).

Aspnes, John D., Professor of Electrical Engineering, Emeritus. University of Wisconsin '65, MS; Montana State University '76, PhD; P.E. (1978 – 1999).

Basham, Charlotte S., Associate Professor of Linguistics and Anthropology, Emerita. Arizona State University '67, BA; San Jose State University '77, MA; University of Michigan, '86, PhD. (1983 – 2005).

Bartlett, Doris (D.A.) A., Assistant Professor of English, Emerita. Middlebury College '55, BA; University of Alaska Anchorage '73, MA; University of Oregon '77, PhD; '81, MA. (1982 – 2004).

Bartlett, Thomas (Tom) E., Associate Professor of Accounting and Information Systems, Emeritus. Rhodes College '67, BA; Emory University '69, MBA; State of Georgia, 1973, C.P.A. State of Alaska, 1978, C.P.A. (1974 – 1998).

Bedford, Jimmy B., Professor of Journalism, Emeritus. University of Missouri '50, AM; '51, BJ; '52, MA. (1965 – 1981). Deceased.

Behlke, Charles E., Dean, School of Engineering, Professor of Civil Engineering, Emeritus. Washington State University '48, BS; '50, MS; Stanford University '57, PhD; P.E. (1950 – 1954, 1965 – 1980). Deceased.

Beistline, Earl H., Dean, School of Mineral Industry, Professor of Mining, Emeritus, Professor of Mining, Emeritus. University of Alaska Fairbanks '39, BME; '47, EM; '69, LLD (Hon); P.E. (1946 – 1982).

Belon, Albert E., Professor of Physics, Emeritus. University of Alaska Fairbanks '52, BS; '84, ScD (Hon); University of California, Los Angeles '54, MA. (1956 – 1983).

Benesch, Walter J., Professor of Philosphy and Humanities, Emeritus. University of Denver '55, BA; University of Montana '56, MA; Leopold Franzens Universitat, Innsbruck '63, PhD. (1963 – 1997).

Bennett, F. Lawrence (Larry), Professor of Engineering Management, Emeritus. Rensselaer Polytechnic Institute '61, BCE; Cornell University '63, MS; '66, PhD; P.E. (1968 – 1997).

Benson, Carl S., Professor of Geophysics and Geology, Emeritus. University of Minnesota '50, BA; '56, MS; California Institute of Technology '60, PhD. (1960 – 1987).

Berman, Gerald S., Professor of Social Work and Sociology, Emeritus. University of Michigan '56, BA; Case Western Reserve University '63, MSW; Case Western Reserve University, '70, PhD. (1980 – 2006).

Bernet, John (Jack) W., Professor of English, Emeritus. State University of Iowa '51, BA; University of North Dakota '57, MA; Stanford University '69, MA; '69, PhD. (1959 – 1964, 1970 – 1988).

Biesiot, Peter G., Professor of Business Administration, Emeritus. University of Washington '42, BA; University of Nebraska '51, MS; Cornell University '58, MBA; University of Southern California '66, DBA. (1980 – 1990).

Bird, Roy K., Professor of English and Director, Emeritus. Brigham Young University '72, BA; '74, MA; William Marsh Rice University, '82, PhD. (1984 – 2008). Deceased.

Biswas, Nirendra N., Professor of Geophysics, Emeritus. Indian Institute of Technology, India '55, BSc (Hons); '57, MTech; University of California, Los Angeles '71, PhD. (1971 – 2003).

Black, Lydia T., Professor of Anthropology, Emerita. Northeastern University '69, BS; Brandeis University '71, MA; University of Massachusetts, Amherst '73, PhD. (1984 – 1997). Deceased.

Blalock, Susan E., Associate Professor of English, Emerita. Louisiana State University '68, BA; New York University '70, MA; University of Texas '83, PhD. (1989 – 2004).

Box, Mark A., Professor of English, Emeritus. Northern Illinois University '74, BA; '78, MA; University College, Oxford University '85, PhD. (1990 – 2010).

Bowyer, R. Terry, Professor of Wildlife Ecology, Emeritus. Humboldt State University '70, BS; '76, MS; University of Michigan '85, PhD. (1986 – 2004).

Braddock, Joan Forshaug, Professor of Biology and Dean, Emerita. University of Alaska Fairbanks '77, BS; '83, MS; '89, PhD. (1977 – 2009)

Brody, A. William (Bill), Professor of Art, Emeritus. Harvey Mudd College '65, BS; Claremont Graduate School '67, MFA. (1967 – 2000).

Brundage, Arthur L., Professor of Animal Science, Emeritus. Cornell University '50, BS; University of Minnesota '52, MS; '55, PhD. (1968 – 1985).

Bryant, John P., Professor of Plant Ecology, Emeritus. Colorado State University '66, BA; University of Calgary, Canada '68, MS; University of Alaska Fairbanks '84, PhD. (1977 – 1999).

Burdick, John L., Professor of Civil Engineering, Emeritus. Rensselaer Polytechnic Institute '47, BCE; Massachusetts Institute of Technology '48, SM; P.E. (1960 – 1983).

Burrell, David C., Professor of Marine Science, Emeritus. Nottingham University '61, BSc; '64, PhD; University of Alaska Fairbanks '95, MA. (1965 – 1987).

Button, Don K., Professor Emeritus. Wisconsin State College '55, BS; University of Wisconsin '61, MS; '64, PhD. (1964 – 2005).

Carling, Donald E., Professor of Horticulture, Emeritus. St. Cloud State University '67, BA; University of Missouri-Columbia '69, MS; '75, PhD. (1981 – 2003).

Carlson, Axel R., Professor of Extension, Emeritus. Michigan State University '53, BS; Pennsylvania State University '66, MS. (1965 – 1980).

Carlson, Robert (Bob) F., Professor of Civil Engineering, Emeritus. University of Wisconsin '61, BS; '63, MS; '67, PhD; P.E. (1968 – 2005).

Cashen, William R., Professor of Mathematics & Marshal of the University, Emeritus. University of Alaska Fairbanks '37, BS; University of Washington '48, MA. (1942 – 1974). Deceased.

Chadwick, Jerah, Professor of General and Developmental Studies, Emeritus. Lake Forest College '70, BA; University of Alaska Fairbanks '88, MFA. (1987 – 2009).

Chapin III, F. Stuart "Terry", Distinguished Professor of Biology, Emeritus. Swarthmore College '66, BS; Stanford University '73, PhD. (1973 – 1989, 1996 – 2011).

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Choy, Terence T., Professor of Art, Emeritus. San Francisco State College '65, BA; University of California, Berkeley '67, MA. (1970 – 1990).

Chukwu, Godwin A., Professor of Petroleum Engineering, Emeritus. University of Southwestern Louisiana '79, BS; '80, MS; University of Oklahoma '89, PhD. P.E. (1990 – 2010).

Clark, Bettie E., Head, Alumni Services and Career Planning and Placement, Emeritus. University of Alaska Fairbanks '35, BS. (1962 – 1972). Deceased.

Clark, Vena A., Associate Professor of Home Economics, Emeritus. Cotner College '25, BA; Iowa State University '33, MS. (1953 – 1967). Deceased.

Clausen, Thomas P., Professor of Chemistry, Emeritus. University of Alaska Fairbanks '75, BS; Michigan State University '80, PhD. (1982 – 2011).

Clutts, Joan (Rusty), Professor of Education, Emeritus. Colorado College '51, BA; University of Missouri '69, MEd; '69, EdD. (1961 – 1984). Deceased.

Colligan-Taylor, Karen, Professor of Japanese, Emerita. University of California, Berkeley '71, BA; '75, MA; Stanford University '85, PhD. (1984 – 2001).

Connor, William, Clinical Associate Professor of Psychology, Emeritus. State University College at Cortland, New York '72, BS; University of Delaware '74, MEd; University of Missouri-Columbia, '83, PhD. (1983 – 2007)

Cook, Donald J., Professor of Mineral Beneficiation, Emeritus. University of Alaska Fairbanks '47, BS; '54, EM; Pennsylvania State University '58, MS; '60, PhD; P.E. (1957 – 1979). Deceased.

Cooney, R. Theodore (Ted), Professor of Marine Science, Emeritus. University of Washington '64, BS; '67, MS; '71, PhD. (1970 – 1999).

Copus, Gary D., Professor of Justice, Emeritus. Georgia Institute of Technology '67, BS; Sam Houston State University '68, MS; University of Missouri '72, PhD. (1974 – 2003).

Cornwall, Peter J., Associate Professor of History, Emeritus. University of Toronto '62, BA; University of Michigan '63, MA; '70, PhD. (1971 – 2001).

Corti, Lillian Z., Professor of English, Emerita. Brooklyn College '74, BA; The City University of New York '80, MA; '84, PhD. (1991 – 2008).

Coughenower, D. Douglas, Professor of Fisheries and Marine Extension, Emeritus. Oregon State University '63, BS; '72, MS; '74, MS. (1982 – 1998).

Cox, Clifford T., Professor of Accounting, Emeritus. University of Northern Iowa '71, BBA; Kansas State University '75, MBA; University of Iowa '81, PhD. (1980 – 1994). Deceased.

Craven, John D., Professor of Physics, Emeritus. University of Iowa, '63, BA; '64, MS; '69, PhD. (1991 – 2009)

Cutler, Howard A., Chancellor & Regents' Professor of Economics, Emeritus. State University of Iowa '40, BA; '41, MA; Columbia University '51, PhD. (1962 – 1983). Deceased.

Cysewski, Stephen, Professor of Computer Applications, Emeritus. Western Washington University '67, BA; Alaska Pacific University '87, MLA. (1991 – 2008)

Dafoe, Don M., Executive Vice President, Emeritus. Valley City State College '37, BA; University of Idaho '48, MS; Stanford University '61, EdD. (1966 – 1976). Deceased.

Darnell, Frank, Professor of Education, Emeritus. Colorado State University '51, BS; University of Alaska Fairbanks '63, MEd; Wayne State University '70, EdD. (1966 – 1978).

Davis, Charles W., Professor of Music, Emeritus. State University of Iowa '37, BA; '48, MA. (1963 – 1979). Deceased.

Davis, T. Neil, Professor of Geophysics, Emeritus. University of Alaska Fairbanks '55, BS; '61, PhD; California Institute of Technology '57, MS. (1953 – 1982).

Dean, Frederick (Fred) C., Professor of Wildlife Management, Emeritus. University of Maine '50, BS; '52, MS; State University of New York '57, PhD. (1954 – 2001).

Dean, Kenneson G., Research Professor of Remote Sensing, Emeritus. Northern Arizona University '72, BS; University of Alaska Fairbanks '79, MS. (1978 – 2011).

DeCorso, Theodore, Professor of Music, Emeritus. University of Connecticut '65, BS; '77, PhD; The Juilliard School '67, MS. (1974 – 1999).

Deehr, Charles S., Professor of Physics, Emeritus. Reed College '58, BA; University of Alaska Fairbanks '61, MS; '68, PhD. (1958 – 1988).

DiCecco, Bruno, Professor of Music, Emeritus. Yale University School of Music '57, BM; '58, MM. (1981 – 1998).

Dieterich, Robert A., Professor of Veterinary Science, Emeritus. University of California '61, BS; '63, DVM. (1967 – 1987).

Dinkel, Don H., Professor of Plant Physiology, Emeritus. University of Minnesota '54, BS; '60, PhD. (1960 – 1983).

Distad, Jack, Professor of Mathematics, Emeritus. Montana State University '53, BS; '55, MS. (1955 – 1994). Deceased.

Douglas, Jim R., Professor of Extension, Emeritus. University of Nevada, Reno '70, BS; '74, MS. (1984 – 2004).

Doyle, John P., Professor of Fisheries, Emeritus. (1963 – 1987). Deceased.

Drew, James (Jim) V., Dean of School of Agriculture and Land Resources Management, Emeritus; and Director of Agricultural and Forestry Experiment Station, Emeritus. Rutgers University '52, BS; '57, PhD. (1976 – 1996). Deceased.

Dupras, Joseph A., Professor of English, Emeritus. University of Maryland '68, BA; State University of New York at Binghamton '75, MA; '75, PhD. (1979 – 2010).

Dupras, Rheba A., Associate Professor of Library Science, Emerita. Marietta College '73, BA; State University of New York at Binghamton '75, MA; University of Kentucky '79, MSLS. (1980 – 2010).

Earp, Mary E., Associate Professor of Developmental English, Emerita. University of Alaska Fairbanks '95, MEd; Methodist College '95, BEd. 1986 – 2009).

Ebbesson, Sven O., Professor of Marine Science, Emeritus. Southwestern College '57, BS; University of Maryland '64, PhD. (1985 – 1999).

Echelmeyer, Keith A., Professor of Geophysics, Emeritus. University of Colorado '76, BS; California Institute of Technology '79, MS; '83, PhD. (1984 – 2005). Deceased.

Eichelberger, John C., Professor of Geology and Geophysics, Emeritus. Massachusetts Institute of Technology, BS; MS; '70; Stanford University '74, PhD. (1991 – 2007)

Elsner, Robert, Professor of Marine Science, Emeritus. New York University '50, BA; University of Washington '55, MS; '59, PhD. (1973 – 1988).

Elvey, Christian T., Director of Geophysical Institute, Emeritus. University of Alaska Fairbanks '69, ScD (Hon). Deceased.

Ensign, Walter G., Professor of Theatre and Drama, Emeritus. University of Denver '67, BA; University of Denver '67, MA. (1969 – 1997).

Epps, Alan C., Professor of Natural Resources, Emeritus. Montana State University '66, BS; '69, MS. (1969 – 1988).

Erickson, Karen J., Associate Professor of Political Science, Emerita. Stanford University '58, BA; Harvard University '63, MA; '76, PhD. (1991 – 2006).

Falk, Marvin W., Professor of Library Science and Curator of Rare Books, Emeritus. University of Minnesota '65, BA; University of Massachusetts '66, MA; University of Iowa '76, PhD. (1975 – 1998).

Feder, Howard M., Professor of Marine Biology, Emeritus. University of California, Los Angeles '48, BA; '51, MA; Stanford University '56, PhD. (1970 – 1990).

Fink, Milton A., Professor of Accounting, Emeritus. University of Nebraska '58, BS; University of Denver '66, MSBA; 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, BS; Iowa State College '22, MS; University of Alaska Fairbanks '59, DHum (Hon). (1925 – 1959). Deceased.

Forbes, Robert B., Professor of Geology, Emeritus. University of Washington '50, BS; '59, PhD. (1959 – 1977). Deceased.

Fox, John D., Associate Professor of Land Resources Management, Emeritus. Trinity College '68, BS; University of Washington '70, MS; '76, PhD. (1973 – 2011).

Gaffney, Michael J., Associate Professor of Alaska Native Studies, Emeritus. San Francisco State College '63, BA; University of California, Los Angeles '68, MA; '73, PhD. (1974 – 1994).

Garza, Dolores, Professor of Fisheries, Emerita. University of Alaska Fairbanks '80, BS; University of Washington '83, MS; University of Delaware '96, PhD. (1983 – 2006).

Gasbarro, Anthony (Tony) F., Associate Professor of Forestry Extension, Emeritus. Colorado State University '62, BS; University of Alaska Fairbanks '79, MS. (1973 – 1996).

Gatterdam, Ronald (Ron) W., Professor of Computer Science and Mathematics, Emeritus. California Institute of Technology '61, BS; University of Southern California '65, MA; University of California, Irvine '70, PhD. (1982 – 2003).

Geist, Charles R., Professor of Psychology, Emeritus. University of San Diego '68, BS; University of Montana '73, MA; '75, PhD. (1974 – 1999).

Gilmore, John C., Professor of Physical Education, Emeritus. Stanford University '54, BA; '58, MA; '67, EdD. (1968 – 1984).

Gilmore, Perry, Professor of Education, Emerita. Temple University '66, BS; Temple University '76, MS; University of Pennsylvania '82, PhD. (1985 – 2000).

Gislason, Gary A., Professor of Mathematics, Emeritus. University of Alaska Fairbanks '66, BS; University of Oregon '68, MS; '70, PhD. (1970 – 2001).

Gladden, James N., Professor of Political Science, Emeritus. Indiana University Bloomington '72, BA; '84, PhD; University of Houston '77, MA. (1985 – 2010).

Goering, John J., Professor of Marine Science, Emeritus. Bethel College '56, BS; University of Wisconsin '60, MS; '62, PhD. (1962 – 1997).

Gold, Carol, Professor of History, Emeritus. Antioch College '64, BA; University of Wisconsin Madison '67, MA; '75, PhD. (1980 – 2011).

Gordon, Bruce R., Professor of French and Spanish, Emeritus. Brown University '37, BA; New York State College for Teachers '42, MA; Syracuse University '50, PhD. (1963 – 1977). Deceased.

Griese, Arnold A., Professor of Education, Emeritus. Georgetown University '48, BA; University of Miami '57, MEd; University of Arizona '60, PhD. (1960 – 1980).

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Guthrie, R. Dale, Professor of Zoology, Emeritus. University of Illinois '58, BS; '59, MS; University of Chicago '63, PhD. (1963 – 1996).

Haldorson, Lewis J., Professor of Fisheries, Emeritus. University of Minnesota '63, BA; University of California, Santa Barbara '78, MA; '78, PhD. (1980 – 2001).

Hales, David A., Professor of Library Science, Emeritus. Brigham Young University '66, BS; Drexel University '68, MLS; University of Pennsylvania '72, MA. (1972 – 1995).

Hallinan, Thomas (Tom) J., Professor of Geophysics, Emeritus. Cornell University '64, BSEE; University of Alaska Fairbanks '69, MS; '76, PhD. (1965 – 1997).

Hallsten (Stokes), DeAnne M., Professor of Career Counseling, Emerita. Occidental College '60, BA; University of Oklahoma '75, MA. (1981 – 1999).

Haneman, Vincent (Vince) S., Dean of the School of Engineering, Emeritus and Professor of Mechanical Engineering, Emeritus. Massachusetts Institute of Technology '47, BS; University of Michigan '50, MSE (AE); '56, PhD (AE). (1980 – 1991).

Happ, George M., Research Professor of Biomedical Sciences, Emeritus. Principia College '58, BS; Cornell University '64, PhD. (1997 – 2010).

Harbo, Samuel J., Professor of Wildlife Management and Biometrics, Emeritus. University of Nebraska '51, BS; University of Alaska Fairbanks '58, MS; North Carolina State University '72, PhD. (1964 – 1986).

Harrison, William D., Professor of Physics, Emeritus. Mt. Allison University '58, BSc; University of London '60, BSc (Special); California Institute of Technology '66, PhD. (1972 – 1998).

Hawkins, Daniel B., Professor of Geology and Chemistry, Emeritus. Montana State College '56, BS; '57, MS; Pennsylvania State University '61, PhD. (1967 – 1990).

Head, Thomas J., Professor of Mathematics and Computer Science, Emeritus. University of Oklahoma '54, BS; '55, MA; University of Kansas '62, PhD. (1965 – 1988).

Hessler, Victor P., Professor of Geophysics, Emeritus. Oregon State University '26, BS; Iowa State University '27, MS; '34, PhD. (1955 – 1968). Deceased.

Hibler III, William D., Research Professor of Sea Ice Physics, Emeritus. University of Missouri '65, BS; Cornell University '68, MS; '69, PhD. (1999 – 2009)

Highsmith, Raymond C., Professor of Marine Science, Emeritus. University of Iowa '72, BA; University of Washington '79, PhD. (1983 – 2005).

Hollerbach, Wolf, Professor of French and Spanish, Emeritus. Universite de Rennes '61, PhD; University of Bonn '62, Wissenschaftliches Staatsexamen. (1965 – 1988). Deceased.

Hood, Donald W., Professor of Marine Science, Emeritus. Pennsylvania State University '40, BS; Oklahoma State University '42, MS; Texas A&M University '50, PhD. (1965 – 1978). Deceased.

Hopkins, David M., Distinguished Professor of Quaternary Science, Emeritus. University of New Hampshire '42, BS; Harvard University '48, MS; '55, PhD. (1985 – 1994). Deceased.

Hoskins, L. Claron, Professor of Chemistry, Emeritus. Utah State University '62, BS; Massachusetts Institute of Technology '65, PhD. (1965 – 1994).

Hunsucker, Robert, Professor of Electrical Engineering, Emeritus and Professor of Physics, Emeritus. Oregon State University '54, BS; '58, MS; University of Colorado '69, PhD. (1971 – 1987).

Hunt, William R., Professor of History, Emeritus. Seattle University '51, BS; University of Washington '58, JD; '66, MA; '67, PhD. (1967 – 1979).

Husby, Fredric (Fred) M., Professor of Animal Science and Dean, Emeritus. Washington State University '66, BS; '69, MS; '73, PhD. (1975 – 2000).

Illingworth, Marjorie Louise, Associate Professor of Developmental Studies, Emerita. Iowa State University '65, BS; University of Alaska Fairbanks '94, MEd. (1990 – 2010).

Illingworth, Ronald D., Professor of English and Developmental Education, Emeritus. Iowa State University '64, BS; University of Nebraska Omaha '80, MA; Appalachian State University '91, EdSpec. (1986 – 2010).

Irving, Laurence, Professor of Zoophysiology, Emeritus. Bowdoin College '16, BA; Harvard University '17, MA; Stanford University '24, PhD; University of Oslo '56, M.D. (Hon); Bowdoin College '59, (Hon); University of Alaska Fairbanks '68, ScD (Hon). (1962 – 1975). Deceased.

Jacobson, Steven A., Professor of Yupik Eskimo, Emeritus. University of California, Berkeley '66, BA; '71, MA. (1972 – 2010).

Jayaweera, Kolf O., Professor of Physics, Emeritus. University of Ceylon '60, BSc; University of London '65, PhD. (1970 – 1991).

Johnson, Ronald A., Professor of Mechanical and Environmental Engineering, Emeritus. Brown University '65, BS; Cornell University '66, MS; '69, PhD. P.E. (1976 – 2009).

Jonaitis, Aldona, Director, Emerita. State University of New York at Stony Brook '69, BA; Columbia University '73, MA; '76, MPhil; '77, PhD. (1993 – 2009).

Jones, Dorothy J., Associate Professor of Computer Applications, Emerita. Prairie View A&M College '68, BS; University of Alaska Fairbanks '77, MEd. (1975 – 2001).

Jones, Laura, Director of Admissions and Registrar, Emeritus. University of Denver '41, BA. (1956 – 1971). Deceased.

Jubenville, Alan, Professor of Resource Management, Emeritus. North Carolina State College '62, BS; West Virginia University '64, MS; University of Montana '70, PhD. (1979 – 1998).

Kamath, Vidyadhar A., Professor of Petroleum Engineering, Emeritus. University of Bombay '80, BS; University of Pittsburgh '82, MS; '83, PhD. (1984 – 2000).

Kan, Joseph (Joe), Professor of Geophysics and Dean, Grad School, Emeritus. Cheng-Kung University, Taiwan '61, BS; Washington State University '66, MS; University of California, San Diego '69, PhD. (1972 – 2003).

Kane, Douglas L., Professor of Civil Engineering, Emeritus. University of Wisconsin '66, BS; '68, MS; University of Minnesota '75, PhD. P.E. (1971 – 2009).

Kari, James M., Professor of Linguistics, Emeritus. University of California, Los Angeles '66, BA; Reed College '69, MAT; University of New Mexico '73, PhD. (1973 – 1997).

Kawagley, Angayuqaq Oscar, Associate Professor of Education, Emeritus. University of Alaska Fairbanks '58, BEd; '68, MEd; '87, EdSpec; University of British Columbia '93, PhD. (1986 – 2009). Deceased.

Keim, Charles J., Professor of Journalism and English, Emeritus. University of Washington '48, BA; '50, MA. (1954 – 1977). Deceased.

Keller, William K., Professor of Education, Emeritus. State College of Washington '21, MA; '21, BA; '41, EdD; University of Alaska Fairbanks '61, LLD (Hon). (1952 – 1961). Deceased.

Kelley, John Joseph, Professor of Marine Science, Emeritus. Pennsylvania State University '58, BS; University of Nagoya, Japan '74, PhD. (1969 – 2010).

Kessel, Brina, Dean of the College of Biological Sciences and Renewable Resources, Emerita; Professor of Zoology, Emerita and Curator of Ornithology Collection, University of Alaska Museum, Emerita. Cornell University '47, BS; '51, PhD; University of Wisconsin '49, MS. (1951 – 1999).

Kirts, Carla A., Dean of Student Services, Emerita and Associate Professor of Agricultural Education, Emerita. Virginia Polytechnic Institute and State University '76, BS; '77, MS; University of Missouri-Columbia '81, PhD. (1981 – 2002).

Klebesadel, Leslie J., Professor of Agronomy, Emeritus. University of Wisconsin '55, BS; '56, MS; University of Wisconsin '58, PhD. (1957 – 1988).

Klein, David R., Professor of Wildlife Management, Emeritus. University of Connecticut '51, BS; University of Alaska Fairbanks '53, MS; University of British Columbia '63, PhD. (1962 – 1997).

Kleinfeld, Judith S., Professor of Psychology and Northern Studies, Emerita. Wellesley College '66, BA; Harvard University '67, EdM; '69, EdD. (1969 – 2010).

Knight, Charles W., Associate Professor of Agronomy, Emeritus. Kansas State University '70, BS; '71, MS; University of Alaska Fairbanks '88, PhD. (1978 – 2002).

Koo, John H., Professor of Linguistics, Japanese and Korean, Emeritus. Tongkook University, Korea '56, BA; Tongkook University, Korea '58, MA; University of Texas '65, MA; Indiana University '70, PhD. (1969 – 1994). Deceased.

Kramer, Donald E., Professor of Fisheries, Emeritus. Ohio State University '60, BS; University of California, Davis '62, MA; '67, PhD. (1980 – 2008).

Krauss, Michael E., Professor of Linguistics, Emeritus. University of Chicago '53, BA; Columbia University '55, MA; University of Paris '56, Certificat d'Etudes Superieures; Harvard University '59, PhD; Haskoli Islands '60, Baccalaureatus Philologiae Islandicae. (1960 – 2000).

Krejci, Rudolph (Rudy) W., Professor of Philosophy and Humanities, Emeritus. Leopold Franzens Universitat, Innsbruck '59, PhD. (1960 – 1997).

Krieg, Kenneth (Ken) L., Professor of Extension, Emeritus. University of Missouri '64, BS; '65, MS. (1981 – 1997).

Kwachka, Patricia B., Professor of Anthropology and Linguistics, Emerita. University of Florida '64, BA; University of Florida '70, MA; '82, PhD. (1979 – 2006).

Lambert, John P., Professor of Mathematics, Emeritus. University of Cincinnati '64, BS; University of New Mexico '68, MA; Claremont Graduate School '82, PhD. (1982 – 1998).

Lando, Barbara M., Professor of Mathematics and Computer Science, Emeritus. Georgian Court College '62, BA; Rutgers University '64, MS; '69, PhD. (1969 – 1990).

Lando, Clifton (Clif) A., Associate Professor of Mathematics, Emeritus. Lehigh University '62, BA; Rutgers University '64, MS; '69, PhD. (1969 – 1999).

Layral, Sheri L., Governance Coordinator and Faculty Senate Secretary, Emerita. University of Alaska Juneau '75, AA; University of Alaska Fairbanks '80, BS; '88, MEd. (1980 – 2007).

Lee, Margaret (Molly) C., Professor of Anthropology and Curator, Emerita. University of California, Santa Barbara '79, BA; '82, MA; '85, MA; '92, PhD. (1995 – 2009).

Leekley, James R., Senior Scientist in Charge, Petersburg Fur Farm, Emeritus. Oregon State University '38, BS. (1941 – 1972). Deceased.

Lehman, John A., Professor of Business Administration, Emeritus. University of Michigan '72, BA; '73, MA; '77, MBA; '82, PhD. (1987 – 2011).

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Leipzig, John S., Dean of the College of Liberal Arts, Emeritus and Professor of Communication, Emeritus. (1982 – 2002).

Li, Shusun, Research Professor of Geophysics, Emeritus. Peking University, China '66, BA; University of California, Santa Barbara '82, MA; '85, PhD. (1990 – 2008).

Lincoln, Tamara, Associate Professor of Library Science, Emerita. University of Illinois '61, BFA; '64, MA; Northern Illinois University '76, MLS. (1976 – 2009).

Lind, Marshall L., Chancellor, Emeritus. University of Wisconsin - Milwaukee '58, BS; University of Montana '65, MEd; Northwestern University '69, PhD. (1999 – 2004).

Lingle, Craig, Research Professor of Geophysics, Emeritus. University of Washington '67, BS; University of Maine, Orono '78, MS; University of Wisconsin-Madison, '83, PhD. (1990 – 2007).

Lister, Ruth, Director, Tanana Valley Campus, Emerita. McGill University '64, BSc; University of Toronto '65, MA; Cornell '74, PhD. (1991 – 1999). Deceased.

Logsdon, Charles E., Professor of Plant Pathology, Emeritus. University of Missouri-Kansas City '42, BA; University of Minnesota '54, PhD. (1953 – 1978). Deceased.

Long, Kristine A., Professor of Extension, Emerita. California Polytechnic State University '72, BS; '75, MS; Virginia Polytechnic Institute and State University '91, PhD. (1977 – 2010).

Lull, Janis, Professor of English, Emerita. University of Oregon '67, BA; University of Minnesota '82, MA; '83, PhD. (1986 – 1996).

Lummerzheim, Dirk, Research Professor of Geophysics, Emeritus. University Koln '76, Vordiplom; University Gottingen '81, Diplom Geophysik; University of Alaska Fairbanks '87, PhD. (1989 – 2010).

Lynch, Donald F., Professor of Geography, Emeritus. Yale College '52, BA; Yale University '65, PhD. (1970 – 1998).

MacLean, Stephen (Steve) F., Professor of Zoology, Emeritus. University of California, Santa Barbara '64, BA; University of California, Berkeley '69, PhD. (1971 – 1997).

Madonna, James (Jim) A., Professor of Mining Extension, Emeritus. Victor Valley Junior College '69, AS; Humboldt State University '71, BA; University of Alaska Fairbanks '73, MS; University of Tasmania '96, PhD. (1971 – 1999).

Mangusso, Mary Childers, Associate Professor of History, Emerita. University of New Mexico '63, BA; '66, MA; Texas Tech University '78, PhD. (1966 – 1969, 1974 – 2010).

Margraf, F. Joseph, Professor of Fisheries, Emeritus. Cornell University '70, BS; Texas A&M University '77, MS; '78, PhD. (1999 – 2010).

Mark-Anthony, Leo, Professor of Mining Extension, Emeritus. University of Alaska Fairbanks '52, BS. (1952 – 1987).

Martin, Wanda, Director, Emerita. Portland State University '68, BS; '69, MST; Oregon State University '76, EdD. (1984 – 2006).

Mather, Keith (K.B.) B., Director of the Geophysical Institute, Emeritus and Professor of Physics, Emeritus. Adelaide University '42, BSc; Adelaide University '44, MSc; University of Alaska Fairbanks '68, ScD (Hon). Deceased.

Mathisen, Ole A., Professor of Fisheries, Emeritus. University of Oslo '45, Cand. real.; University of Washington '55, PhD. (1982 – 1997). Deceased.

Matthews, James (Jim) W., Professor of Extension, Emeritus. North Dakota State University '52, BS; University of Wisconsin '61, MS; '70, PhD. (1957 – 1987).

McCarthy, Paul H., Professor of Library Science, Emeritus and Director of Libraries, Emeritus. St. John Fisher College '62, BA; Syracuse University '64, MLS. (1964 – 1993).

McHenry, Susan I. (Sue), Academic Advisor, Emerita. UAF '70, BA; '76, MEd. (1972 – 2008).

McFadden, Terry T., Professor of Mechanical Engineering, Emeritus. Brigham Young University '60, BESME; Stanford University '65, MSME; University of Alaska Fairbanks '74, PhD; P.E. (1977 – 1997).

McKendrick, Jay D., Professor of Agronomy, Emeritus. University of Idaho '63, BS; '66, MS; Kansas State University '71, PhD. (1972 – 1998).

McRoy, C. Peter, Professor of Marine Science, Emeritus. Michigan State University '63, BS; University of Washington '66, MS; University of Alaska Fairbanks, '70, PhD. (1967 – 2007).

Mendenhall, William (Bill) W., Professor of Civil Engineering, Emeritus. Cornell University '49, BCE; Cornell University '60, MS; P.E. (1955 – 1987).

Merritt, Robert P., Professor of Electrical Engineering, Emeritus. Oregon State College '49, BS; Stanford University '68, MS; P.E. (1955 – 1966, 1968 – 1987). Deceased.

Milan, Frederick A., Professor of Human Ecology and Anthropology, Emeritus. University of Alaska Fairbanks '52, BA; '52, BA; University of Wisconsin '59, MS; '62, PhD. (1971 – 1987). Deceased.

Miller, John M., Senior Applications Engineer, Emeritus. University of Alaska Fairbanks '60, BS; '68, MS. (1958 – 1994).

Miller, Orlando W., Professor of History, Emeritus. Muhlenberg College '47, BA; Columbia University '48, MA; '66, PhD. (1957 – 1978). Deceased.

Milner, Laura M., Professor of Business Administration, Emerita. University of Georgia '78, BA; Kansas State University '81, MS; '85, PhD. (1986 – 2007).

Mitchell, Francis, Associate Professor of Extension, Emeritus. College of Great Falls Montana '58, BA; Whitworth College '75, MA. (1983 – 1997).

Mitchell, William W., Professor of Agronomy, Emeritus. University of Montana '57, BA; '58, MA; Iowa State University '62, PhD. (1963 – 1988).

Moessner, Victoria J., Professor of German, Emerita. Indiana University '59, BA; University of Michigan '63, MA; '71, PhD; '81, AMLS. (1981 – 2007).

Moore, Terris, President Emeritus and Professor of the University. Williams College '29, BA; Harvard University '33, MBA; '37, DCS; University of Alaska Fairbanks '67, LLD (Hon). (President 1949 – 1953, Prof. 1953 – 1972). Deceased.

Morack, John L., Professor of Physics, Emeritus. Union College '61, BS; Oregon State University '68, PhD. (1975 – 1999).

Morgan, John W., Professor of English, Emeritus. Harvard University '65, BA; University of Iowa '67, MFA. (1976 – 1998).

Morgan, Joli B., Professor of Applied Business, Emeritus. Excelsior College '81, BS; Clarkson University '82, MBA. (1976 – 1997).

Morgan, Lael, Associate Professor of Journalism, Emerita. Boston University '59, BS; '87, MS. (1988 – 1999).

Morrison, Peter R., Professor of Zoophysiology, Emeritus. Swarthmore College '40, AB; Harvard University '47, PhD. (1963 – 1974).

Morrow, James E., Professor of Zoology, Emeritus. Middlebury College '40, AB; '42, MS; '44, MS; Yale University '49, PhD. (1960 – 1977).

Morrow, Phyllis, Professor of Anthropology and Dean, Emerita. Harvard-Radcliffe '72, BA; Cornell University '76, MA; '87, PhD. (1987 – 2007).

Murphy, Edward (Ed) C., Professor of Biology and Wildlife, Emeritus. University of California, Berkeley '70, BA; University of Alaska Fairbanks '74, MS; University of Kansas '77, PhD. (1977 – 2008).

Murray, David (Dave) F., Professor of Botany and Curator, Emeritus. Middlebury College '59, AB; University of Alaska Fairbanks '61, MS; University of Colorado '66, PhD. (1969 – 1994).

Naidu, A. Satyanrayan (Sathy), Professor of Marine Science, Emeritus. Andhra University '59, BS; '60, MS; '68, PhD. (1969 – 2004).

Naske, Claus-M., Professor of History, Emeritus. University of Alaska Fairbanks '61, BA; University of Michigan '64, MA; Washington State University '70, PhD. (1969 – 2001).

Neiland, Bonita J., Professor of Land Resources and Botany, Emeritus. University of Oregon '49, BS; Oregon State College '51, MA; University of Wisconsin '54, PhD. (1961 – 1988). Deceased.

Niebauer, Henry (Joe) J., Professor of Marine Science, Emeritus. University of Wisconsin - Madison '67, BS; University of Wisconsin - Madison '76, PhD. (1976 – 1997).

Nielsen, Hans C.S., Professor of Geophysics, Emeritus. Royal Technical University of Denmark '65, MS. (1967 – 2010).

Novatney, Dorothy H., Professor of English, Emeritus. Pomona College '28, BA; Claremont College '30, MA; Teachers College '38, EdD. (1943 – 1945, 1956 – 1963). Deceased.

Ogbe, David O., Professor of Petroleum Engineering, Emeritus. Louisiana State University '76, BS; '78, MS; Stanford University '84, PhD. (1984 – 2005).

Ohtake, Takeshi, Professor of Physics, Emeritus. Tohoku University '52, BSc; '61, DSc. (1964 – 1988).

Oien, M. Burton (Burt), Professor of Accounting, Emeritus. University of North Dakota BS; '65, BA; '66, MS; University of Oklahoma '76, PhD. (1980 – 1993).

O'Rourke, Patrick J., Chancellor, Emeritus. St. John's University '64, BA; Indiana State University '68, MS; University of Connecticut '77, PhD. (1970 – 1991).

Orvik, James M., Professor of Psychology, Emeritus. San Diego State University '63, BA; '65, MS; Colorado College '70, PhD. (1969 – 1988).

Osterkamp, Thomas (Tom) E., Professor of Physics, Emeritus. Southern Illinois University '62, BA; Saint Louis University '64, MS. (1968 – 1997).

Oswood, Mark W., Professor of Aquatic Biology, Emeritus. Washington State University '71, BS; University of Montana '76, PhD. (1977 – 1999).

Packee, Edmond C., Professor of Forest Management, Emeritus. University of Montana '62, BSF; Yale University '63, MF; University of Minnesota, '76, PhD. (1983 – 2006).

Parthasarathy, Raghavaiyengar, Professor of Physics, Emeritus. Annamalai University '50, BS. (1958 – 1980).

Paul III, Augustus (A.J.) J., Professor of Marine Science, Emeritus. University of Massachusetts, Amherst '69, BS; University of Alaska Fairbanks '73, MS; Hokkaido University '87, PhD. (1971 – 2002).

Paust, Brian C., Professor of Fisheries, Emeritus. University of Washington '76, BS; University of Alaska Fairbanks '79, MS. (1977 – 2002).

Pearson, Roger W., Professor of Geography, Emeritus. Illinois State University '63, BS; University of Illinois '65, MS. (1976 – 1998).

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Perkins Jr., Maynard G., Associate Professor of Mathematics and Natural Sciences, Emeritus. University of Alaska Fairbanks '67, BS; Colorado State University '72, MEd; Appalachian State University '93, EdS. (1985 – 1999).

Phillips, William G., Professor of Business and Finance, Emeritus. Waynesburg College '52, BS; American Graduate School of International Management '58; University of Nebraska '67, MA; '70, PhD. (1975 – 1991). Deceased.

Pierce, Richard A., Professor of History, Emeritus. University of California, Berkeley '40, BA; '52, MA; '56, PhD. (1986 – 1998). Deceased.

Porter, David O., Professor of Business Administration, Emeritus. University of Utah '63, BS; '65, MA; Syracuse University '70, PhD. (1993 – 2010).

Powers, Roger W., Professor of Anthropology, Emeritus. Idaho State University '64, BA; University of Wisconsin '68, MS; '73, PhD. (1971 – 2001). Deceased.

Probasco, Peter M., Professor of Extension, Emeritus. University of Minnesota '56, BS; '61, MS; '77, PhD. (1966 – 1982).

Pulpan, Hans, Associate Professor of Geophysics, Emeritus. Montanistische Hochschule Loeben, Austria '61, Dipl. Eng; University of Illinois '64, MS; '68, PhD. (1968 – 1996).

Purser, Jerry, Professor of Extension Education, Emeritus. North Carolina State University '64, BS; '69, MS. (1975 – 1996). Deceased.

Quang, Pham X., Professor of Statistics, Emeritus. University of Saigon '61, BS; Western Washington University '71, MS; University of California, Berkeley '74, PhD. (1985 – 2002).

Quarberg, Donald (Don) M., Professor of Extension, Emeritus. University of Wisconsin '72, BS; Texas A&M University '74, MS. (1979 – 1997).

Rae, Kenneth M., Vice President for Research and Professor of Marine Science, Emeritus. University College, London '35, BSc; '58, PhD. (1961 – 1976). Deceased.

Rao, Nagabhushana (Nag) M., Professor of Sociology, Emeritus. University of Mysore '57, BA (Hon); Washington State University '74, PhD. (1970 – 2003).

Rao, Pemmasani D., Professor of Coal Technology, Emeritus. Andhra University '52, BSc; Andhra University '54, MSc; Pennsylvania State University '59, MS; '61, PhD. (1966 – 1994).

Ray, Charles K., Professor of Education, Emeritus. University of Colorado '51, BA; Columbia University '55, MA; '59, EdD. (1957 – 1992).

Read, Colin L., Professor of Economics, Emeritus. Capilano College '79, AAS; Simon Fraser University '81, BS; Queens University '82, MA; '88, PhD; University of Alaska Fairbanks '98, MBA. (1989 – 2004).

Reeburgh, William S., Professor of Marine Science, Emeritus. University of Oklahoma '61, BS; Johns Hopkins University '64, MA; '67, PhD. (1968 – 1998).

Rees, Manfred H., Professor of Geophics, Emeritus. West Virginia University '48, BSEE; University of Colorado '56, MS; '58, PhD. (1975 – 1993).

Reichardt, Paul B., Professor of Chemistry, Emeritus and Provost, Emeritus. Davidson College '65, BS; University of Wisconsin '69, PhD. (1972 – 2007).

Renner, Louis L., Professor of German, Emeritus. Gonzaga University '50, AB; '51, MA; University of Santa Clara '58, MST; University of Munich, Germany '65, PhD. (1965 – 1980).

Restad, Sigmund H., Assistant Director, Emeritus, Alaska Agricultural and Forestry Experiment Station. University of Minnesota '53, BS; '54, MS. (1958 – 1962, 1968 – 1987).

Reynolds, James B., Professor of Fisheries, Emeritus. Utah State University '61, BS; Iowa State University '63, MS; Iowa State University '66, PhD. (1978 – 2001).

Reynolds, Janice M., Professor of Sociology, Emerita. Central Michigan University '64, BS; Ohio State University '67, MA; '69, PhD. (1988 – 2000).

Rice, Elbert F., Professor of Civil Engineering, Emeritus. University of Idaho '48, BS; Oregon State College '49, MS; '55, PhD; P.E. (1952 – 1982). Deceased.

Rice, Michael L., Vice Chancellor for Administrative Services and Professor of Business Administration, Emeritus. Florida State University '71, BS; '72, MBA; University of North Carolina at Chapel Hill '75, PhD. (1983 – 1998).

Roberts, Thomas D., Professor of Electrical Engineering, Emeritus and Director of the Institute of Northern Engineering, Emeritus. University of Alabama '59, BS; Oregon State University '65, PhD; P.E. (1966 – 1987, 1987 – 1998).

Robinson, E. Thomas (Tom), Professor of Accounting and Info Systems, Emeritus. University of Wisconsin '67, BBA; '71, MS; '82 C.M.A. (1974 – 2005).

Roederer, Juan G., Professor of Physics, Emeritus. University of Buenos Aires '52, PhD. (1977 – 1993).

Rogers, George W., Professor of Economics, Emeritus. University of California, Berkeley '42, BA; '43, MA; Harvard University '50, PhD; University of Alaska Anchorage '86, (Hon). (1960 – 1983). Deceased.

Romick, Gerald J., Professor of Geophysics, Emeritus. University of Alaska Fairbanks '52, BS; '64, PhD; University of California, Los Angeles '54, MS. (1951 – 1984).

Roth, Mitchell, Professor of Computer Science, Emeritus. Michigan State University '73, MS; University of Illinois '80, PhD. (1983 – 2008).

Rowinski, Ludwig (L.J.) J., Director of University of Alaska Museum, Emeritus. Cornell University '51, BS; University of Alaska Fairbanks '58, MS. (1957 – 1980).

Royer, Thomas (Tom) C., Professor of Marine Science, Emeritus. Albion College '63, BA; Texas A&M University '66, MS; '69, MS. (1969 – 1997).

Ryberg, H. Theodore, Director of Libraries, Emeritus. Gettysburg College '55, AB; Western Reserve University '57, MS. (1962 – 1980).

Sackinger, William (Bill) M., Associate Professor of Geophysics and Electrical Engineering, Emeritus. University of Notre Dame '59, BS; Cornell University '61, MS; '69, PhD; P.E. (1970 – 1996). Deceased.

Salisbury, Lee H., Professor of Speech and Drama, Emeritus. New York University '49, BS; Columbia University '50, MA. (1955 – 2001).

Sandberg, Harlem D., Professor of Extension, Emeritus. University of Minnesota '55, BS; Michigan State University '64, MA; '75, EdS; '79, EdD. (1965 – 1984).

Sargent, Charles, Dean, College of Mathematics, Physical Sciences and Engineering, Emeritus. University of Idaho '48, BSCE; Stanford University '58, MS. (1961 – 1967). Deceased.

Schell, Donald M., Professor of Marine Science and Water Resources, Emeritus. University of Alaska Fairbanks '64, MS; '71, PhD. (1976 – 2002).

Scott, G. Richard, Professor of Anthropology, Emeritus. Arizona State University '68, BA; '73, PhD. (1973 – 1997).

Schneider, William S., Professor of Library Science, Emeritus. Franklin and Marshall College '68, BA; Bryn Mawr College '76, PhD. (1980 – 2011).

Schuldiner, Michael, Professor of English, Emeritus. Goddard College, '69, BA; Kent State University '79, PhD. (1980 – 2009).

Sedinger, James S., Professor of Wildlife Ecology, Emeritus. University of Washington '71, BS; University of California, Davis '83, PhD. (1985 – 2001).

Seifert, Richard D., Professor of Engineering Extension, Emeritus. West Chester State College '70, BA; University of Alaska Fairbanks '73, MS. (1973 – 2010).

Sentman, Davis D., Professor of Physics, Emeritus. University of Iowa '71, BA; '73, MS; '76, PhD. (1991 – 2011).

Senungetuk, Ronald (Ron), Professor of Art, Emeritus. Rochester Institute of Technology '60, AAS; '60, BFA; Statens handvaerks og Kunstindustriskole, Oslo Norway '61, Diploma. (1961 – 1987).

Severns, Virgil D, Professor of Agriculture CCREE Emeritus. Kansas State College, '51, BS.; '56, MS. (1961 – 1985).

Sharma, Ghanshyam (G.D.) D., Director of the Petroleum Development Laboratory, Emeritus and Professor of Petroleum Engineering, Emeritus. Benares Hindu University '52, BS; Swiss Federal Institute of Technology '58, Diploma of Engineering Geology; University of Michigan '61, PhD. (1963 – 1992).

Shaw, David G., Professor of Marine Science and Chemistry, Emeritus. University of California, Los Angeles '67, BS; Harvard University '71, PhD. (1973 – 1996).

Shaw, Glenn E., Professor of Physics, Emeritus. Montana State University '63, BS; University of Southern California '65, MS; University of Arizona '71, PhD. (1971 – 2004).

Shelton, Harris W., Vice Chancellor for Student Affairs, Emeritus. University of South Florida '65, BA; Florida State University '71, PhD. (N/A – 1992).

Sheridan, J. Roger, Professor of Physics, Emeritus. Reed College '55, BA; University of Washington '64, PhD. (1964 – 1987).

Shields, Gerald F., Professor of Zoology, Emeritus. Carroll College '66, BA; Central Washington State College '70, MS; University of Toronto '74, PhD. (1975 – 1999).

Shinkwin, Anne D., Professor of Anthropology, Emeritus. University of Connecticut '60, BA; George Washington University '64, MA; University of Wisconsin '75, PhD. (1971 – 1991).

Shirley, Thomas (Tom) C., Professor of Fisheries, Emeritus. Texas A&M University '69, BS; '74, MS; Louisiana State University, '82, PhD. (1982 – 2005).

Shumaker, Peggy Z., Professor of English, Emerita. University of Arizona '79, MFA. (1985 – 1999).

Simpson, Glen C., Professor of Art, Emeritus. Rochester Institute of Technology '68, BFA; '69, MFA. (1969 – 1997).

Sivjee, Abas, Professor of Physics, Emeritus. University of London '63, BS; Johns Hopkins University '70, PhD. (1972 – 1988).

Skelton, Irvin (Irv) W., Professor of Extension, Emeritus. University of Wyoming '60, BS; Colorado State University '70, MEd; '74, PhD. (1984 – 1997).

Slotnick, Herman E., Professor of History, Emeritus. University of Idaho '39, BA; University of Washington '58, PhD. (1955 – 1978). Deceased.

Smith, David M., Professor of Anthropology and Linguistics, Emeritus. Nyack College '56, BA; Hartford Seminary Foundation '65, MA; Michigan State University '69, PhD. (1986 – 2000). Deceased.

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Smith, R. London, Professor of Political Science, Emeritus. College of St. Joseph '54, BA; University of Oklahoma '55, MA; American University '64, PhD. (1965 – 1984).

Smith, Roger W., Professor of Physics and Director, Emeritus. University of Exeter '63, BS; '67, PhD. (1984 – 2011).

Smith, Ronald L., Professor of Zoology, Emeritus. University of Miami '67, MS; '68, PhD. (19 – 1999).

Smoker, William W., Professor of Fisheries, Emeritus. Carleton College '67, BA; Oregon State University '70, MS; '82, PhD. (1978 – 2009).

Soos, Frank M., Professor of Creative Writing, Emeritus. Davidson College '72, AB; University of Arkansas '81, MFA. (1986 – 2004).

Stamnes, Knut H., Professor of Physics, Emeritus. University of Oslo '69, BS; University of Oslo '72, MS; University of Colorado '78, PhD. (1988 – 1999).

Stanek, Sheryl A., Professor of Extension and Home Economics, Emerita. Washington State University '64, BS; University of Alaska Anchorage '89, MEd. (1989 – 2005). Deceased.

Stech, David A., Professor of Music, Emeritus. University of Minnesota '67, BS; Ohio State University '69, MA; Michigan State University, '76, PhD. (1972 – 2007).

Stephens, Dennis J., Associate Professor of Library Science, Emeritus. Portland State University '69, BA; University of Denver '75, MA. (1978 – 2004).

Stetson, Marguerite, Professor of Extension, Emeritus. Oregon State University '57, BS; University of Alaska Fairbanks '73, MAT. (1974 – 1987).

Stolzberg, Richard J., Professor of Chemistry, Emeritus. Tufts University '69, BS; Massachusetts Institute of Technology '73, PhD. (1978 – 2005).

Stone, David B., Professor of Geophysics, Emeritus. University of Keele '56, BA; University of Newcastle Upon Tyne '63, PhD. (1966 – 1996).

Stratton, Russell E., Professor of English, Emeritus. Princeton University '60, AB; University of Southern Mississippi '76, MA; '79, PhD. (1983 – 1998).

Stringer, William (Bill) J., Associate Professor of Geophysics, Emeritus. New Mexico State University '62, BS; University of Alaska Fairbanks '66, MS; '71, PhD. (1967 – 1999).

Sunnell, Agnes S., Associate Professor of Extension, Emeritus. University of Washington '31, BS; Washington State University '44, MS. (1960 – 1970). Deceased.

Swartz, L. Gerard, Professor of Biological Sciences, Emeritus. University of Illinois '53, BS; University of Illinois '54, MS; '58, PhD. (1958 – 1988).

Swift, Daniel W., Professor of Physics, Emeritus. Haverford College '57, BA; Massachusetts Institute of Technology '59, MS. (1963 – 1994).

Tape, Walter (Walt), Professor of Mathematics, Emeritus. Princeton University '62, BA; University of Michigan '68, PhD. (1982 – 2004).

Taylor, Roscoe L., Professor of Agronomy, Emeritus. South Dakota State University '48, BS; Iowa State University '51, MS. (1951 – 1988). Deceased.

Thomas, Natalie A., Professor of Extension, Emeritus. University of Maine '65, BS; University of Alaska Fairbanks '77, MEd; Boston University '92, PhD. (1970 – 1994).

Thomas, Wayne C., Professor of Economics, Emeritus. California Polytechnic State University '65, BS; University of Nevada '67, MS; Washington State University '71, PhD. (1971 – 1990).

Tiedemann, James B., Professor of Mechanical Engineering, Emeritus. University of Wisconsin '45, BS; '49, MS; '55, PhD; P.E. (1965 – 1986). Deceased.

Tilly, Lola C., Professor of Home Economics, Emeritus. University of Illinois '20, AB; University of Illinois '21, MS; University of Alaska Fairbanks '63, DHum (Hon). (1929 – 1937). Deceased.

Tilsworth, Timothy (Tim), Professor of Civil Engineering and Environmental Quality Engineering, Emeritus. University of Nebraska '66, BSCE; '67, MSCE; University of Kansas '70, PhD; P.E. (1970 – 1994).

Tremarello, Ann M., Registrar, Emerita. University of Alaska Fairbanks '57, BBA. (1957 – 2002).

Triplehorn, Don M., Professor of Geology, Emeritus. Ohio Wesleyan University '56, BA; Indiana University '57, MA; University of Illinois '61, PhD. (1969 – 1997).

Triplehorn, Julia H., Associate Professor of Library Science, Emerita. Ohio Wesleyan U niveristy '57, BA; University of Illinois '60, MSLS. (1970 – 2009).

Turner, Donald (Don), Professor of Geology, Emeritus. University of California, Berkeley '60, AB; '68, PhD. (1970 – 1988).

Turner, John L., Professor of Education, Emeritus. McMurray College '51, BS; North Texas State University '55, MEd; New Mexico State University '68, EdS. (1966 – 1989). Deceased.

Tyler, Albert V., Professor of Fisheries, Emeritus. University of Pennsylvania '60, BA; University of Toronto '64, MA; '68, PhD. (1991 – 2002). Deceased.

Van Cleve, Keith, Professor of Forestry, Emeritus. University of Washington '58, BS; University of California, Berkeley '60, MS; '67, PhD. (1967 – 1994).

Van Veldhuizen, Philip A., Professor of Mathematics, Emeritus. Central College '52, BA; State University of Iowa '60, MS. (1963 – 1988).

Vandre, Wayne G., Professor of Extension, Emeritus. University of Wisconsin '68, BS; '75, MS. (1977 – 1998).

Wadlow, Joan K., Chancellor, Emerita; and Professor of Political Science. University of Nebraska '53, BA; '63, PhD; Fletcher School of Law and Diplomacy '56, MA. (1991 – 1999).

Walker, Cynthia L., Associate Professor of English, Emerita. Denison University '70, BA; Purdue University '72, MA; '74, PhD. (1977 – 1997).

Watkins, Brenton J., Professor of Physics, Emeritus. University of Adelaide '68, BS; La Trobe University '72, MS; University of Alaska Fairbanks '76, PhD. (1981 – 2011).

Weeden, Robert B., Professor of Resource Management, Emeritus. University of Massachusetts '53, BS; University of Maine '55, MS; University of British Columbia '59, PhD. (1967 – 1990).

Weeks, Wilford (Willy) F., Professor of Geophysics, Emeritus. University of Illinois '51, BS; '53, MS; University of Chicago '56, PhD. (1986 – 1996).

Weflen, Arvid, Professor of Aviation Technology, Emeritus. St. Cloud State University '71, BS. (1980 – 2007).

Weller, Gunter E., Professor of Geophysics, Emeritus. University of Melbourne '62, BS; '64, MS; '68, PhD. (1968 – 1997).

Wells, Minnie E., Professor of English, Emeritus. University of Missouri '25, BS; New York University '38, PhD. (1945 – 1971). Deceased.

Wendler, Gerd, Professor of Geophysics, Emeritus. University of Innsbruck '64, DPhil. (1966 – 1999).

Wescott, Eugene M., Professor of Geophysics, Emeritus. University of California, Los Angeles '55, BA; University of Alaska Fairbanks '64, PhD. (1958 – 1997).

West, Sharon M., Professor of Library Science, Emeritus. University of Southern Colorado '69, BS; University of Denver '70, MA. (1973 – 1997).

White, Robert G., Director of the Institute of Arctic Biology and Professor of Zoophysiology and Nutrition, Emeritus. University of Melbourne '62, BAgrS; University of New England '68, M.Rur.S.; '73, PhD. (1970 – 1999).

Whitehead, John S., Professor of History, Emeritus. Yale College '67, BA; '69, MA; '71, PhD; Cambridge University '72, MA. (1978 – 1998).

Wichmann Jr., Henry (Hank), Professor of Accounting, Emeritus. University of Denver '62, BS; Colorado State College '64, MA; University of Northern Colorado '72, PhD. (1986 – 2009).

Wiese, Craig S., Professor of Fisheries, Emeritus. Oregon State University '66, BS; '74, MS; '76, MBA. (1977 – 1997).

Wilm, Helga R., Executive Officer, Emeritus. (1968 – 2009).

Williamson, Francis S., Director of the Institute of Arctic Biology, Emeritus. San Diego State University '50, BS; University of California, Berkeley '55, MA; Johns Hopkins University '68, DSc. (1986 – 1992).

Wilson, Charles (Buck) R., Professor of Physics, Emeritus. Case Institute of Technology '51, BS; University of New Mexico '56, MS; University of Alaska Fairbanks '63, PhD.

Wilson, William S., Head, Department of General Science, and Professor of Chemistry and General Science, Emeritus. Brown University '31, BSc; '34, MSc; Yale University '36, PhD. (1947 – 1972). Deceased.

Wood, Margaret (Peggy) K., Director of the Bristol Bay Campus, Emerita. University of Washington '59, BS; University of Oregon '68, MS; '77, PhD. (1979 – 2004).

Wood, William R., President, Emeritus. Illinois College '27, AB; University of Iowa '36, MA; '39, PhD; Illinois College '60, (Hon). (1960 – 1973). Deceased.

Wooding, Frank J., Professor of Agronomy, Emeritus. University of Illinois '63, BS; Kansas State University '66, MS; '69, PhD. (1970 – 1993). Deceased.

Woodward, Kesler (Kes) E., Professor of Art, Emeritus. Davidson College '73, BA; Idaho State University '77, MFA. (1981 – 2000).

Wright, Gordon B., Professor of Music, Emeritus. College of Wooster '57, BM; University of Wisconsin '61, MA. (1969 – 1989). Deceased.

Wyss, Max, Wadati Professor of Seismology, Emeritus. Fed Inst Tech '64, Diploma; California Institute of Technology '67, MS; '70, PhD. (1991 – 2001).

Zarling, John P., Professor of Mechanical Engineering, Emeritus. Michigan Technological University '64, BSME; '66, MSME; '71, PhDEM. (1976 – 1997).

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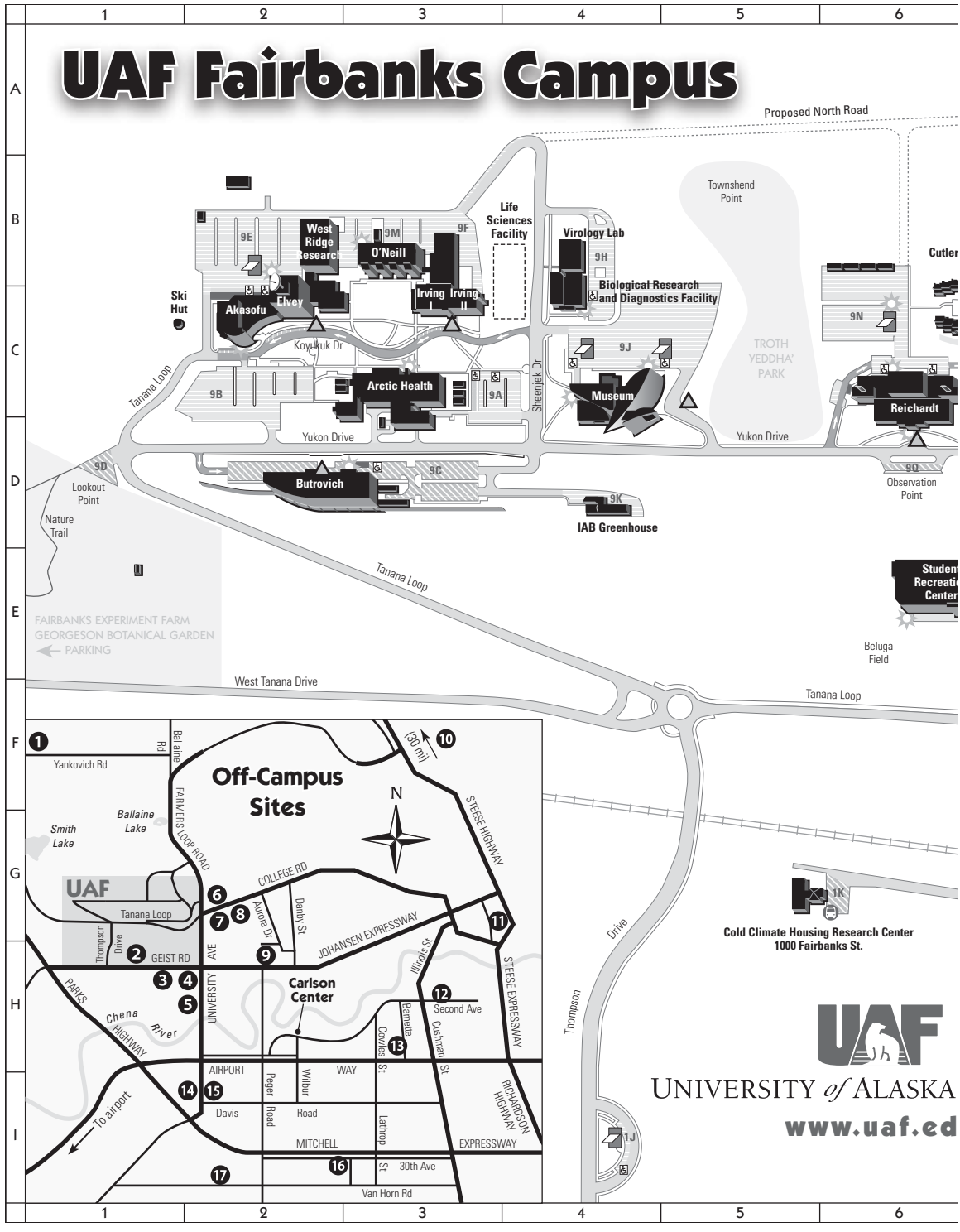
1. Robert G. White Large Animal Research Station, Yankovich Road
2. Harper Building, 4280 Geist Road (Interior-Aleutians Campus)
3. West Valley Plaza, 4001 Geist Road
4. Wells Fargo Building, 794 University Ave.
5. Facilities Services Division of Design and Construction, 590 University Ave.
6. Denali Building, 3352 College Road
7. Administrative Services Center, 3295 College Road
8. Statewide Risk Management, 1760 Westwood Way
9. Central Receiving, Campus Mail Services, 1855 Marika Road
10. Poker Flat Research Range, 30 mile Steese Highway
11. CTC Cosmetology Program, 607 Old Steese Hwy. (Cornerstone Mall North), Suite C
12. Downtown Center, CTC, 510 Second Ave.
13. UAF Community and Technical College, 604 Barnette St.
14. Fire Station 2, 1950 University Ave. S.
15. West Side Business Park, 2175 University Ave. S. (Center for Distance Education, College of Rural and Community Development Bookstore, Statewide Office of Academic Affairs, Alaska Teacher Placement, Early Childhood Education, Math in a Cultural Context)
16. CTC Automotive Technology Center, 3202 Industrial Ave.
17. Fairbanks Pipeline Training Center, 3600 Cartwright Court

STUDENT SERVICES

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Admissions (Signers' Hall)..... e-10
Business Office (Signers' Hall) e-10
Bookstore (Constitution Hall)..... d-10
Career Services (Eielson Bldg)..... e-10
Developmental Education (Eielson Bldg)..... e-10
Dining (Lola Tilly Commons) f-9
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New Student Orientation (Wood Center)..... d-9/10
Polar*Express* (Eielson Bldg) e-10
Registrar (Signers' Hall)..... e-10
Residence Life/Housing (MBS Complex)..... c-8
Rural Student Services (Brooks Bldg) e-11
Student Center (Wood Center)..... d-9/10
Student Recreation Center e-6
Veterans' Services (Eielson Bldg)..... e-10
Women's Center (Eielson Bldg)..... e-10
Writing Center (Gruening Bldg)..... e-10

RESIDENCE HALLS AND HOUSING

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Cutler Apartment Complex..... b/c-6/7
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Garden Apartments b-9
Harwood Hall..... b-9
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Lathrop Hall e-8
MacLean House..... b-9
McIntosh Hall e-9
Moore Hall..... c-7
Nerland Hall..... e-9
Nordic House..... b-9
Skarland Hall c-8
Stevens Hall..... e-8
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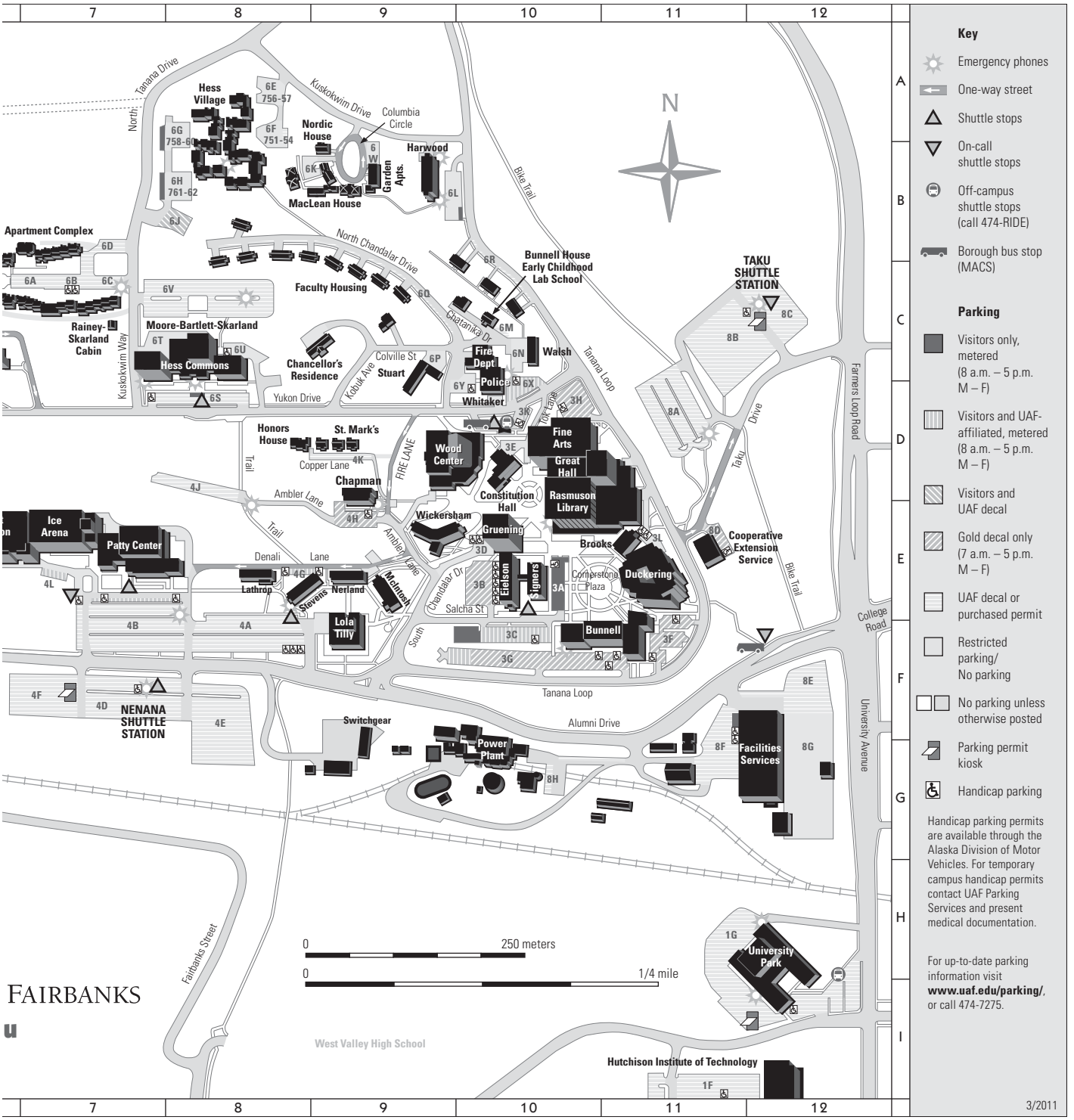
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Key

- Emergency phones
- One-way street
- Shuttle stops
- On-call shuttle stops
- Off-campus shuttle stops (call 474-RIDE)
- Borough bus stop (MACS)

Parking

- Visitors only, metered (8 a.m. – 5 p.m. M – F)
- Visitors and UAF-affiliated, metered (8 a.m. – 5 p.m. M – F)
- Visitors and UAF decal
- Gold decal only (7 a.m. – 5 p.m. M – F)
- UAF decal or purchased permit
- Restricted parking/ No parking
- No parking unless otherwise posted
- Parking permit kiosk
- Handicap parking

Handicap parking permits are available through the Alaska Division of Motor Vehicles. For temporary campus handicap permits contact UAF Parking Services and present medical documentation.

For up-to-date parking information visit **www.uaf.edu/parking/**, or call 474-7275.

3/2011

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Information 474-7211
Academic Advising Center (509 Gruening)…advising@uaf.edu 474-6396
Admissions & the Registrar, Office of (102 Signers' Hall)
admissions@uaf.edu or registrar@uaf.edu 474-7500
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Alaska Native Language Center (400 Brooks)…fyanlp@uaf.edu 474-7874
Alaska Native Studies & Rural Development (315 Brooks)
fydanrd@uaf.edu 474-6528
Alaska Space Grant Program (207 Duckering)…fyspace@uaf.edu 474-6833
Alumni Association (201 Constitution Hall)…fyalum@uaf.edu 474-7081
Anthropology (310 Eielson)…fyanth@uaf.edu 474-7288
Arctic Biology, Institute of (311 Irving I)…fyiab@uaf.edu 474-7640
Arctic Region Supercomputing Center (105 West Ridge Research)
consult@arsc.edu 450-8600
Art (310 Fine Arts/Theatre)…fyart@uaf.edu 474-7530
Asian Studies Program (605A Gruening)…fyasia@uaf.edu 474-6507
ASUAF (119 Wood Center)…fypres@uaf.edu 474-7355
Athletics (211 Patty) 474-7780
Biology & Wildlife (211 Irving I)…fybio@uaf.edu 474-7671
Bookstore (200 Constitution Hall)…fybook@uaf.edu 474-7348
Bristol Bay Campus (Box 1070, Dillingham, AK 99576)
bjalexander@alaska.edu 842-5109
Business Office (115 Signers' Hall)…business.office@uaf.edu 474-7384
Career Services (110 Eielson)…fycsc@uaf.edu 474-7596
Chancellor's Office (320 Signers' Hall)…uaf.chancellor@alaska.edu ... 474-7112
Chemistry & Biochemistry (194 Reichardt)
chemistry.uaf@alaska.edu 474-5510
Chukchi Campus (Box 297, Kotzebue, AK 99752) 442-3400
Civil & Environmental Engineering (245 Duckering)…fycee@uaf.edu 474-7241
Communication (503 Gruening)…fycomm@uaf.edu 474-6591
Community & Technical College, UAF (604 Barnette St.)
uaf-ctc@alaska.edu ..... 455-2800, TTY 455-2877
Computer Science (202 Chapman)…uaf-cs-dept@alaska.edu 474-2777
Cross-Cultural Studies (124 Bunnell)…fycxcs@uaf.edu 474-1902
Developmental Education (508C Gruening)…fydeved@uaf.edu 474-1112
Dining Services (116 Eielson)…fyfood@uaf.edu 474-6661
Disability Services (208 Whitaker)
uaf-disabilityservices@alaska.edu ..... 474-5655, TTY 474-1827
Distance Education, Center for (2175 University Ave. S)
distance@uaf.edu 479-3444
Education, School of (709 Gruening)…fysoed@uaf.edu 474-7341
Electrical & Computer Engineering (203 Duckering)…fyee@uaf.edu.....474-7137
Engineering & Mines, College of (357 Duckering)
cem.dean@alaska.edu 474-7730
Engineering & Science Management (253 Duckering)
raperkins@alaska.edu 474-7694
English (850 Gruening)…faengl@uaf.edu 474-7193
Fisheries & Ocean Sciences, School of (245 O'Neill)
info@sfos.uaf.edu 474-7824
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Graduate School (202 Eielson)…fygrads@uaf.edu 474-7464
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Housing/Residence Life (MBS Complex)…housing@uaf.edu 474-7247
Human Resources (108 Admin. Svcs. Ctr., 3295 College Rd.) 474-7700
Interdisciplinary Programs (202 Eielson)
fyinds@uaf.edu 474-7716
Interior-Aleutians Campus (101 Harper Bldg., 4280 Geist Rd.)
iacinfo@uaf.edu 474-5439
International Arctic Research Center (423 Akasofu)
info@iarc.uaf.edu 474-6016
International Programs (215 Eielson)…fyoip@uaf.edu 474-5327
Journalism (101 Bunnell)…fyjnb@uaf.edu 474-7761
Justice (501 Gruening)…fyjust@uaf.edu 474-5500
Kuskokwim Campus (Box 368, Bethel, AK 99559)
mmglore@alaska.edu 543-4500
Liberal Arts, College of (404 Gruening)…fycla@uaf.edu 474-7231
Library, Rasmuson (310 Tanana Dr.)
uaf-lib-dean@alaska.edu ..... 474-7481, TTY 474-6744
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Mathematics & Statistics (101 Chapman)…fymath@uaf.edu 474-7332
Mechanical Engineering (337 Duckering)…fymech@uaf.edu 474-7136
Mining & Geological Engineering (301 Duckering)…fyminge@uaf.edu..... 474-7388
Multicultural Affairs & Diversity (104 Eielson)…fyoma@uaf.edu 474-7300
Museum of the North, UA (907 Yukon Dr.)
museum@uaf.edu ..... 474-7505, TTY 474-1949
Music (201A Fine Arts/Theatre)…uaf.music@alaska.edu 474-7555
Natural Resources & Agricultural Sciences, School of (172 Arctic Health)
fysnras@uaf.edu 474-7083
Natural Science & Mathematics, College of (358 Reichardt)
uaf-cnsm@alaska.edu 474-7608
New Student Orientation (101F Wood Center)
orientation@uaf.edu 474-1103
Northern Engineering, Institute of (539 Duckering) 474-5457
Northern Studies (613B Gruening)…fynors@uaf.edu 474-7126
Northwest Campus (P.O. Box 400, Nome, AK 99762)
nwc.info@alaska.edu 443-2201
Parking Services (114 Facilities Svcs. Bldg., 803 Alumni Dr.)
fypark1@uaf.edu 474-7275
Petroleum Engineering (425 Duckering)…fyipete@uaf.edu 474-7734
Philosophy & Humanities (702 Gruening)…fyphil@uaf.edu 474-7343
Physics (102 Reichardt)…physics@uaf.edu 474-7339
Polar*Express* ID cards (116 Eielson)…fyexprss@uaf.edu 474-7657
Police (Whitaker)…UAF-Police-Dept@alaska.edu ..... (TTY and Voice) 474-7721
Political Science (603C Gruening)…fypsci@uaf.edu 474-7609
Post Office (107 Constitution Hall) 474-7215
Provost's Office (310 Signers' Hall)…uaf.provost@alaska.edu 474-7096
Psychology (705E Gruening)…fypsych@uaf.edu 474-7007
Research Services, Center for (212 West Ridge Research)
fycrs@uaf.edu 474-6000
Residence Life (MBS Complex)…housing@uaf.edu 474-7247
Resources Management (303 O'Neill)…mmwestphal@alaska.edu 474-7188
ROTC/Military Science (115 Patty)
uaf-army-rotc-dept@alaska.edu 474-7501
Rural & Community Development, College of (400 Brooks)
fyrural@uaf.edu 474-7143
Rural Student Services (200 Brooks)…fyrss@uaf.edu 474-7871
Social Work (601D Gruening)…fyswk@uaf.edu 474-7240
Sociology (702 Gruening)…fysoc@uaf.edu 474-5494
Student Activities (101E Wood Center) 474-6026
Student Assistance/Advising Center (604 Barnette, Rm. 110)
uaf-ctc@alaska.edu 455-2800
Student Health & Counseling (203 Whitaker)
uaf-sh-cc@alaska.edu ..... 474-7043, TTY 474-7045
Student Recreation Center…ruth.olsen@alaska.edu 474-5886
Student Services (514 Gruening)…fyses@uaf.edu 474-7317
Student Support Services (512 Gruening)
uaf.trio-sss@alaska.edu 474-6844
Summer Sessions and Lifelong Learning (216 Eielson)
summer@uaf.edu 474-7021
Testing Services (211 Gruening)…uaf.testing@alaska.edu 474-5277
Theatre (302 Fine Arts/Theatre)…fythtr@uaf.edu 474-7751
Veterans' Services (101 Eielson)…financialaid@uaf.edu 474-6391
Women's & Gender Studies (603C Gruening)…fywst@uaf.edu 474-7609
Women's Center (112 Eielson)…fywoc@uaf.edu 474-6360
Wood Center 474-7034
Writing Center (801 Gruening) 474-5314

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