



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:

- AACSB International
- ABET — Engineering Accreditation Commission
- ABET — Computing Accreditation Commission
- Accrediting Council on Education in Journalism and Mass Communication
- Alaska Police Standards Council
- American Alliance of Museums
- American Bar Association
- American Chemical Society
- American Psychological Association
- Commission on Accreditation of Allied Health Education Programs: Medical Assistant and Paramedic Program
- Commission on Dental Accreditation
- Council for the Accreditation of Educator Preparation and Alaska State Board of Education
- Council on Social Work Education
- Federal Aviation Administration
- National Association for Developmental Education
- National Association of Schools of Music
- National Automotive Technicians Education Foundation
- Society of American Foresters

Programs approved after this catalog was published are available at [www.uaf.edu/catalog/current/addendum.html](http://www.uaf.edu/catalog/current/addendum.html). Students enrolling for the first time should also refer to the registration guide at [www.uaf.edu/register/](http://www.uaf.edu/register/). Search for courses available for registration at [www.uaf.edu/coursefinder/](http://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 can be found at <http://edir.alaska.edu>.

Students walk along Yukon Drive on the first day of the spring 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, B.B.A.	•			•		
Accounting, Applied, A.A.S. (e)	•		•			
Accounting Technician, Cert. (e)		•				
Aerospace Engineering	•					
Airframe, Cert. (see Aviation Maintenance)		•				
Airframe and Powerplant, Cert. (see Aviation Maintenance)		•				
Alaska Native Languages	•					
Alaska Native Studies, B.A.	•			•		
American Sign Language	•					
Anthropology, B.A., B.S., M.A., Ph.D.	•			•	•	•
Apprenticeship Technologies, A.A.S.			•			
Arctic and Northern Studies, M.A.					•	
Arctic Skills	•					
Art, B.A., B.F.A., M.F.A.	•			•	•	
Arts and Sciences, B.A.S.				•		
Asian Studies	•					
Associate of Arts, A.A. (e)			•			
Associate of Science, A.S.			•			
Atmospheric Sciences, M.S., Ph.D.					•	•
Automotive Technology, Cert.		•				
Aviation Maintenance, A.A.S.			•			
Aviation Technology (see Piloting, Professional)	•					
Baking and Pastry Arts, Cert. (see Culinary Arts and Hospitality)		•				
Biochemistry and Neuroscience, Ph.D.						•
Biological Sciences, B.A., B.S., M.S., Ph.D.	•			•	•	•
Business Administration, B.B.A., MBA	•			•	•	
Business, Applied, A.A.S. (e)	•		•			
Business Management, Applied, Cert. (e)		•				
Chemistry, B.A., B.S., M.S.	•			•	•	
Child Development and Family Studies, B.A.				•		
Civil Engineering, B.S., M.C.E., M.S.				•	•	
Communication, B.A.	•			•		
Communication, Professional, M.A.					•	
Community Health, Cert., A.A.S.		•	•			
Computer Engineering, B.S.				•		
Computer Science, B.S., B.S./M.S., M.S.	•			•	•	
Construction Management, A.A.S.			•			
Construction Trades Technology, Cert.		•				
Counseling, Lic., M.Ed.					•	
Creative Writing, M.F.A. (see English)					•	
Creative Writing and Literature, M.F.A./M.A. (see English)					•	
Cross-Cultural Studies, M.A.					•	
Culinary Arts, Cert. (see Culinary Arts and Hospitality)		•				
Culinary Arts and Hospitality, A.A.S.			•			
Dental Assistant, Cert., A.A.S. (see Health, Allied)		•	•			
Diesel/Heavy Equipment, Cert.		•				
Drafting Technology, Cert., A.A.S.		•	•			
Early Childhood Education, A.A.S.	•		•			

	MINOR	CERTIFICATE	ASSOCIATE	BACHELOR'S	MASTER'S	DOCTORAL
Earth Science, B.A.				•		
Economics, B.A., B.B.A.	•			•		
Economics, Resource and Applied, M.S.					•	
Education, B.A., Lic., M.Ed. (e)	•			•	•	
Electrical Engineering, B.S., M.S.				•	•	
Engineering, Ph.D.						•
English, B.A., M.A.	•			•	•	
Environmental Chemistry, Ph.D.						•
Environmental Politics	•					
Environmental Quality Science, M.S.					•	
Environmental Studies, Cert.		•				
Eskimo, Inupiaq, B.A.	•			•		
Eskimo, Yup'ik, B.A.	•			•		
Ethnobotany, Cert.		•				
Film, B.A.				•		
Film Studies	•					
Fire Science, A.A.S.	•		•			
Fisheries, B.A., B.S., M.S., Ph.D.	•			•	•	•
Foreign Languages, B.A.	•			•		
General Science, B.S.				•		
Geography, B.A., B.S.	•			•		
Geological Engineering, B.S., M.S.				•	•	
Geology, M.S., Ph.D. (see Geoscience for B.S.)					•	•
Geophysics, M.S., Ph.D.					•	•
Geoscience, B.S.	•			•		
Global Studies	•					
Health Care Reimbursement, Cert. (e) (see Health, Allied)		•				
High Latitude Range Management, Cert.		•				
History, B.A.	•			•		
Homeland Security and Emergency Management, B.E.M. (e)	•			•		
Human Services, A.A.S.	•		•			
Indigenous Studies, Ph.D.						•
Information Technology Specialist, Cert., A.A.S.		•	•			
Instrumentation Technology, Cert.		•				
Interdisciplinary Studies, A.A.S., B.A., B.S., B.T., M.A., M.S., Ph.D.	•		•	•	•	•
Japanese Studies, B.A.	•			•		
Journalism, B.A.	•			•		
Justice, B.A. (e)	•			•		
Justice, Administration of, M.A. (e)					•	
Law and Society	•					
Leadership	•					
Linguistics, B.A.	•			•		
Linguistics, Applied, M.A.					•	
Marine Biology, M.S., Ph.D.					•	•
Marine Science	•					
Mathematics, B.A., B.S., M.S., Ph.D.	•			•	•	•
Mechanical Engineering, B.S., B.S./M.S., M.S.				•	•	
Medical Assistant, Cert., A.A.S. (see Health, Allied)		•	•			

	MINOR	CERTIFICATE	ASSOCIATE	BACHELOR'S	MASTER'S	DOCTORAL
Medical/Dental Reception, Cert. (e) (see Health, Allied)		●				
Military Science and Leadership	●					
Mining Engineering, B.S., M.S.	●			●	●	
Music, B.M.	●			●		
Native Language Education, Cert., A.A.S.		●	●			
Natural Resources and Sustainability, Ph.D.						●
Natural Resources Management, B.S., M.S., M.N.R.M.	●			●	●	
Northern Studies, B.A.	●			●		
Nursing Qualifications, Pre-, Cert. (see Health, Allied)		●				
Oceanography, M.S., Ph.D.					●	●
Paralegal Studies, A.A.S.	●		●			
Paramedicine, A.A.S.			●			
Petroleum Engineering, B.S., M.S.				●	●	
Philosophy	●					
Physics, B.S., M.S., Ph.D.	●			●	●	●
Physics, Space, Ph.D.						●
Piloting, Professional, A.A.S.	●		●			
Political Science, B.A.	●			●		
Powerplant, Cert. (see Aviation Maintenance)		●				
Process Technology, A.A.S.			●			
Psychology, B.A., B.S.	●			●		
Psychology, Clinical-Community, Ph.D.						●
Rural Development, B.A., M.A.	●			●	●	
Rural Human Services, Cert.		●				
Russian Studies, B.A.	●			●		
Safety, Health and Environmental Awareness Technology, Cert.		●				
Social Work, B.A.	●			●		
Sociology, B.A.	●			●		
Statistics, M.S.	●				●	
Teaching English to Speakers of Other Languages	●					
Technology, B.T.				●		
Theatre, B.A.	●			●		
Tribal Management, Cert., A.A.S.		●	●			
Wildlife Biology and Conservation, B.S., M.S.	●			●	●	
Women's and Gender Studies	●					
Yup'ik Language and Culture, B.A.				●		
Yup'ik Language Proficiency, Cert., A.A.S.		●	●			

(e) This program can be completed online through eLearning & Distance Education.

### DEGREE CONCENTRATIONS

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

### SPECIAL TRAINING PROGRAMS

Law Enforcement Academy, Paramedic Academy

### OCCUPATIONAL ENDORSEMENTS

Administrative Assistant, Basic Carpentry, Bookkeeping Technician (e), Entry-level Welding, Facility Maintenance, Financial Services Representative (e), Homeland Security, Medical Billing\*(e), Medical Coding\*(e), Medical Office Reception\*(e), Nurse Aide\*, Rural Human Services, Rural Utilities Business Management, Rural Waste Management and Spill Response, Sustainable Energy, Tribal Justice, Wildland Fire Science

### PRE-PROFESSIONAL OPPORTUNITIES

Acupuncture and Oriental Medicine, Architecture, Audiology, Chiropractic, Dentistry, Law, Library Science, Medicine (allopathic and osteopathic), Museum Studies, Naturopathic Medicine, Occupational Therapy, Optometry, Pharmacy, Physical Therapy, Physician Assistant, Podiatry, Speech/Language Pathology, Veterinary Medicine

### GRADUATE AND POSTBACCALAUREATE CERTIFICATES

Design and Construction Management (e), Education (Elementary, Secondary, K-12 Art, Counseling, Special Education), Science Teaching and Outreach, Statistics

\* See Health, Allied

(e) This program can be completed online through eLearning & Distance Education.

### ABBREVIATIONS

A.A.	Associate of Arts
A.A.S.	Associate of Applied Science
A.S.	Associate of Science
B.A.	Bachelor of Arts
B.A.S.	Bachelor of Arts and Sciences
B.B.A.	Bachelor of Business Administration
B.E.M.	Bachelor of Emergency Management
B.F.A.	Bachelor of Fine Arts
B.M.	Bachelor of Music
B.S.	Bachelor of Science
B.T.	Bachelor of Technology
Cert.	Certificate
Lic.	Licensure issued by state of AK
M.A.	Master of Arts
MBA	Master of Business Administration
M.C.E.	Master of Civil Engineering
M.Ed.	Master of Education
M.F.A.	Master of Fine Arts
M.N.R.M.	Master of Natural Resources Management
M.S.	Master of Science
Ph.D.	Doctor of Philosophy



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Students make their way along Yukon Drive on the Fairbanks campus on a sunny autumn afternoon.

# 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 Alaska Campus, covering the Interior; Kuskokwim Campus in Bethel; Northwest Campus in Nome; and the Community and Technical College in Fairbanks.
- UAF’s geographically diverse student body represents 49 states and 45 foreign countries.
- UAF offers 146 degrees and 31 certificates in 117 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 2014

- 169 licensures and occupational endorsements
- 1,117 certificates and associate or baccalaureate degrees
- 272 master’s and doctoral degrees

## Student Profile, Fall 2014

### ENROLLMENT

Fairbanks Campus .....	6,532
Community and Technical College .....	3,105
Bristol Bay Campus .....	611
Chukchi Campus .....	296
Interior Alaska Campus .....	376
Kuskokwim Campus .....	510
Northwest Campus .....	314
eLearning & Distance Education .....	2,538
University of Alaska Fairbanks (total*) .....	9,992

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

• Female	59%
• Male	41%
• Alaska Native/American Indian	18%
• Undergraduate	88%
• Graduate	12%
• Median age	25

## Estimated 2015-2016 UAF Annual Costs

	ALASKA RESIDENT	NON-RESIDENT	WUE*
<b>FRESHMEN AND SOPHOMORES</b>			
Tuition and fees** (30 credits, 100-200-level classes)	\$6,814	\$21,353	\$9,668
Room and board (double room and meal plan)	8,380	8,380	8,380
<b>ANNUAL TOTAL</b>	<b>\$15,194</b>	<b>\$29,733</b>	<b>\$18,048</b>
<b>JUNIORS AND SENIORS</b>			
Tuition and fees** (30 credits, 300-400-level classes)	\$7,999	\$22,538	\$11,447
Room and board (double room and meal plan)	8,380	8,380	8,380
<b>ANNUAL TOTAL</b>	<b>\$16,379</b>	<b>\$30,918</b>	<b>\$19,827</b>
<b>GRADUATE STUDENTS</b>			
Tuition and fees** (18 credits, 600-level classes)	\$8,873	\$17,128	
Room and board (double room and meal plan)	8,380	8,380	
<b>ANNUAL TOTAL</b>	<b>\$17,253</b>	<b>\$25,508</b>	

\* Western Undergraduate Exchange (see page 62)

\*\* Includes Wood Center student life, student government, technology, transportation, UA facilities, 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.

# The UAF Experience

## UAF — Then and Now

UAF's Fairbanks campus is 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 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, learning center and 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 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.

## TODAY

UAF's colleges and schools offer degrees and certificates in 117 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 primary 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 40 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.

In 2017, UAF will celebrate 100 years of making important contributions to Alaska, 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 fall 2014 was 9,992 students. Of those, 59 percent are female and 41 percent male; 88 percent are undergraduate and 12 percent are graduate students. UAF students hail from 49 states and 45 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. UAF students can attend classes through distance delivery from remote areas of Alaska or from anywhere in the world. Using computers, telephones and the Internet, students can take courses or work toward their degrees without leaving home.

Many students take advantage of UAF's exchange programs to study at 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 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 11:1 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 are an individual, not just a face in the crowd.

## UAF's Mission

*The University of Alaska Fairbanks is a Land, Sea, and Space Grant university and an international center for research, education, and the arts, emphasizing the circumpolar North and its diverse peoples. UAF integrates teaching, research, and public service as it educates students for active citizenship and prepares them for lifelong learning and careers.*

### CORE THEMES

- **Educate:** Undergraduate and graduate students and lifelong learners
- **Research:** Create and disseminate new knowledge, insight, technology, artistic and scholarly works
- **Prepare:** Alaska's career, technical and professional workforce
- **Connect:** Alaska Native, rural and urban communities by sharing knowledge and ways of knowing
- **Engage:** Alaskans through outreach for continuing education and community and economic development

## Commitment to Quality

UAF has been accredited since 1934 by the Northwest Commission on Colleges and Universities. UAF acts continually 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 at [www.asuafstudentgov.org/teacher-and-course-evaluations1/](http://www.asuafstudentgov.org/teacher-and-course-evaluations1/). 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/](http://www.uaf.edu/provost/assessment-review/assessment/).

# Campuses

All UAF campuses will be tobacco-free beginning Dec. 31, 2015.

## Fairbanks Campus

The 2,250-acre Fairbanks campus offers limitless opportunities for activity and recreation. The main campus has two lakes and 26 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; a two-story indoor climbing wall; an outdoor climbing tower covered with ice in the winter; and a winter snowboard terrain park. 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, dining facilities, 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 library, 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. 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 oil 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 an area population of some 100,000, 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 tallest 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.

### ELEARNING & DISTANCE EDUCATION

UAF has been a leader since 1963 in offering distance courses and programs for students throughout Alaska and the world. eLearning & Distance Education offers more than 350 courses in 60 disciplines. Additionally, eLearning offers degrees and certificates completely online. Internet-based e-learning lets students further their education and earn their degree without the constraint of classroom attendance. eLearning courses are academically rigorous, meet during regular semesters and count toward degree programs.

For more information contact eLearning & Distance Education in the Bunnell Building on the Fairbanks campus, by phone at 800-277-8060 or 907-479-3444, via email at [uaf-elearning@alaska.edu](mailto:uaf-elearning@alaska.edu) or at <http://elearning.uaf.edu>.

## Community Campuses

In addition to the Fairbanks campus, UAF has community and rural campuses in downtown Fairbanks, Bethel, Dillingham, Kotzebue and Nome, and maintains six community centers through its Interior Alaska 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/](http://www.uaf.edu/rural/).

## Troth Yeddha’

In February 2013 the U.S. Board on Geographic Names officially recognized Troth Yeddha’ as the name for the ridge that is home to the University of Alaska Fairbanks campus. In Lower Tanana Athabascan this name means “Indian potato ridge,” and refers to the plant with an edible root — *Hedysarum alpinum* — that is a traditional food for Native people throughout Alaska. The Athabascan, or Dene, languages have ancient ties to the Tanana Valley. Athabascan geographic names are functional and rule-driven and are shared across neighboring languages. Seeing these as interconnected facts, numerous Tanana Valley Athabascan experts have shared the Troth Yeddha’ place name with pride.

In 1994 the late Chief Peter John of Minto said Athabascan people long ago used to come to Troth Yeddha’ 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 university, he said, they decided that the school would be good and would carry on a traditional use of this hill — a place where good thinking and working together would happen.

In recent years numerous facts about the Chena Athabascans of Troth Yeddha’ have been assembled. Until the 1840s a small village was located at a pond at the base of the ridge, where the UAF Physical Plant is now. Place names for water features surrounding the ridge have also been reconstructed.

UAF celebrates and honors the historical place of Alaska’s first peoples. In 2008 the Board of Regents set aside seven acres as Troth Yeddha’ Park. The park will be a venue to celebrate the rich cultures of Alaska Natives and their presence on the Fairbanks campus.

For more information visit [www.uaf.edu/trothyeddha/](http://www.uaf.edu/trothyeddha/).

## BRISTOL BAY CAMPUS IN DILLINGHAM

The Bristol Bay Campus serves 32 rural communities in the Bristol Bay region within a 55,000-square-mile area. The campus includes 12 coastal communities served by the Aleutian-Pribilof outreach center in Unalaska/Dutch Harbor: the Aleutian archipelago, lower Alaska Peninsula, the Shumigan Islands, and the Pribilof Islands. The campus’ administrative center is in Dillingham (about 322 air miles from Anchorage and 570 air miles from Fairbanks), with centers in King Salmon, Togiak and New Stuyahok. Enrollment at Bristol Bay Campus ranges from 500 to 800 students each semester. The campus offers an Associate of Arts degree in general studies and Associate of Applied Science degrees in allied health, applied business, applied accounting, community health, early childhood education, human services, information technology, interdisciplinary studies and renewable resources. Bachelor’s degree programs include elementary education, interdisciplinary studies, rural development and social work. Master’s degrees are offered in rural development and education. Other programs include Adult Basic Education, providing adult basic education through high school-level instruction for Bristol Bay adults, and the Marine Advisory Program.

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

## COMMUNITY AND TECHNICAL COLLEGE IN FAIRBANKS

The Community and Technical College fulfills UAF’s community college mission in the greater Fairbanks area by offering high-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 nontraditional 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 at 604 Barnette St., in downtown Fairbanks. At the Student Advising and Registration Center, students can receive academic advising, register and pay for classes, and take placement tests.

Additional CTC locations in Fairbanks and other communities include:

- Aviation Maintenance Program Hangar: 3504 University Ave. South
- Bunnell House Early Childhood Lab School: 703 Chatanika Dr.
- 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](http://www.ctc.uaf.edu).

### INTERIOR ALASKA CAMPUS

The Interior Alaska Campus in Fairbanks serves 49 communities and villages in the Doyon region and Interior Alaska, an area about the size of France. The Interior Alaska Campus is the most decentralized of the UAF campuses. Although the director's office and some faculty are located in Fairbanks, there are Interior Alaska Campus staff in Fort Yukon, McGrath, Nenana and Tok. Courses are offered throughout the region online and by audio conference, on site by local or visiting instructors, and via intensive sessions in Fairbanks and Anchorage. The campus offers a range of degree programs, including occupational endorsements, certificates, and Associate of Arts and Associate of Applied Science degrees. Math and English tutors are available for all students taking courses through the campus. For more information, visit [www.uaf.edu/iac/](http://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, 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. KuC also operates one remote learning center based in Hooper Bay, a Yup'ik Eskimo community of 1,000 on the Bering Sea coast. KuC offers academic, vocational and community interest courses, as well as courses leading to associate, baccalaureate and master's degrees, including a Bachelor of Arts degree in Yup'ik language and culture, the home language of many families in the region. The Emerging Scholars Program assists all full-time freshmen in the transition to college, both academically and socially, and in the completion of certificates and degrees. 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](http://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 Diomedede islands. The area contains 570 miles of coastline, which includes all of Norton Sound and portions of the Bering and Chukchi seas.

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 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](http://www.nwc.uaf.edu) or [www.facebook.com/uaf-nwc/](https://www.facebook.com/uaf-nwc/).

# 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 Council for the Accreditation of Educator Preparation, formerly known as the National Council of Accreditation of Teacher Education, and the Alaska Teacher, Student and Cultural Standards.

Undergraduate degree programs and postbaccalaureate endorsement programs lead to state of Alaska teaching certificates in elementary and secondary education. A postbaccalaureate K-12 special education program leads to State of Alaska initial teacher certification or an additional endorsement in special education. Our school counseling program leads to a State of Alaska Type C Special Services certificate. Our community counseling program provides the course work required to be a licensed professional counselor in Alaska. Graduate degree programs leading to a Master of Education include school or community counseling, cross-cultural education, elementary education, secondary education, special education, curriculum and instruction, language and literacy, and online innovation and design.

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 to offer professional development opportunities to practitioners. Faculty research focuses on issues of formal and informal 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 that students and interns need. SOE 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/](http://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, and petroleum engineering, and the research enterprise of the college, the Institute of Northern Engineering. INE houses the Alaska Center for Energy and Power, the Alaska University Transportation Center, the Mineral Industry Research Laboratory, the Petroleum Development Laboratory 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 computer science and civil, computer, electrical, geological, mechanical, mining and petroleum engineering 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, gives CEM students the expertise and training they need for their chosen career path.

CEM departments are active in outreach activities such as Engineering Week, 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 <http://cem.uaf.edu> or call 907-474-7730 for more information.

## FISHERIES AND OCEAN SCIENCES

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

For undergraduate degrees, SFOS offers a minor, Bachelor of Science and Bachelor of Arts in fisheries, and a minor in marine sciences. Fieldwork opportunities are available to undergraduate students through cooperating state and federal agencies, and internships are available with nonprofit and industry fishery partners. Undergraduate fisheries majors are

prepared for graduate study or to enter management, private industry or other fields.

Graduate degrees offered by SFOS include Master of Science and doctoral degrees in oceanography, marine biology and fisheries. Students can also pursue studies in seafood science through the fisheries program. Graduate students prepare for careers in university research and education, or 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 around Alaska and beyond.

Education, research and extension work on freshwater and marine systems are conducted by the departments that make up SFOS. The Institute of Marine Science, with major laboratory facilities in Fairbanks and Seward, focuses on oceanographic and marine biological research and graduate education. The Kasitsna Bay laboratory, near Homer, is the site for coastal research on intertidal and subtidal communities. The Juneau Center focuses on fisheries research and education. The Kodiak Seafood and Marine Science Center is focused on research and extension work in seafood science and sustainable harvest technology. The Marine Advisory Program offers public education and outreach statewide from its offices in Anchorage and coastal communities. SFOS also operates the oceanographic vessel *Sikuliaq*, a global-class research vessel designed to work in the ice-laden waters of polar regions. The *Sikuliaq* is based in Seward.

For more information, visit [www.sfos.uaf.edu](http://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/](http://www.uaf.edu/gradsch/) or by calling 907-474-7464.

### LIBERAL ARTS

As one of the largest colleges at Alaska's research university, the 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 inform our teaching to provide students with opportunities to become knowledgeable in and across the arts and humanities, and 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/](http://www.uaf.edu/cla/) or by calling 907-474-7231.

### MANAGEMENT

The School of Management provides a high-quality education that prepares students to meet the challenges facing businesses in Alaska and around the world. The school's programs include undergraduate degrees in accounting, business administration, economics, and homeland security and emergency management, as well as 12 undergraduate minors. Graduate degrees include a Master of Business Administration, a Master of Science in resource and applied economics, and a doctorate in natural resources and sustainability. The School of Management is accredited by the Association to Advance Collegiate Schools of Business (AACSB) International and is one of only 182 schools worldwide with an additional specialized accreditation in accounting.

Going beyond the classroom, SOM embraces experiential learning by encouraging students to be active participants in their education through involvement in student organizations, paid internships and events.

For more information visit [www.uaf.edu/som/](http://www.uaf.edu/som/) or call 907-474-7461.

### NATURAL RESOURCES AND EXTENSION

Scientists, natural resources managers and policymakers are becoming more aware of the complexity and interrelatedness of society and the environment. Implementing sustainable natural resources decisions in contemporary society requires an interdisciplinary approach. Graduates of the School of Natural Resources and Extension use their academic training to facilitate the wise management of renewable resources. The undergraduate program in natural resources management integrates knowledge in natural sciences, policy, forestry, economics and human values to examine the sustainable use of natural resources and decisions regarding their management.

Graduate students may earn one of two types of master's degrees in natural resources management — one thesis-based and one project-based — and a doctorate in natural resources and sustainability.

Faculty and students conduct research through 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. SNRE 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/snre/](http://www.uaf.edu/snre/) or call 907-474-7083.

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

Academic programs provide a foundation for professional careers or advanced study, and help students develop critical thinking and analytical skills. 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 CNSM Division of Research, the Geophysical Institute, the Institute of Arctic Biology, the UA Museum of the North and the International Arctic Research Center. The fundamental knowledge gained through courses and by working on practical, discipline-related projects gives CNSM graduates the skills and experience they need to enter the job market or continue their education.

CNSM is home to the Alaska Native Science and Engineering Program and K–12 outreach programs, including the Science Potpourri, the Alaska Summer Research Academy, Girls on Ice and GeoFORCE. In these and other programs, high school and university students work with CNSM faculty on original research projects aimed at improving the quality of life in Alaska.

At the graduate level, CNSM offers Master of Science and doctoral degrees in the natural sciences and mathematics. These advanced programs provide students with research opportunities in laboratory and field settings throughout Alaska. CNSM's doctoral programs provide opportunities for advanced study leading to academic and professional positions. In 2015, CNSM will begin a cooperative program in veterinary medicine with Colorado State University. For more information, visit [www.uaf.edu/cnsm/](http://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 nontraditional students, including students who seek skills and degrees suited to the economy and well-being of rural communities. CRCDC promotes workforce preparation, economic development, lifelong learning and community development. CRCDC 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, CRCDC offers workshops, continuing education and short-term courses, developmental studies, credit for prior learning and other nondegree-oriented services.

CRCDC community campuses include Northwest (Nome), Kuskokwim (Bethel), Bristol Bay (Dillingham), Chukchi (Kotzebue), Interior Alaska (Fairbanks, which administers six centers throughout the Interior), and the Community and Technical College (downtown Fairbanks).

CRCDC serves nearly two-thirds of Alaska, encompassing 160 primarily Alaska Native Arctic, sub-Arctic and coastal communities. At least 16 indigenous languages are spoken in the region served by CRCDC, 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/](http://www.uaf.edu/rural/) or call 907-474-7143.

# Research Institutes, Centers and Consortia

UAF's location in Interior Alaska provides easy access to glaciers, permafrost, the Pacific and Arctic oceans, and other elements of a sub-Arctic 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 cultures.

The vice chancellor for research oversees all university research activities and has primary responsibility for the university's research mission. The VCR office 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 production, 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.

AFES, in cooperation with state and federal agencies, conducts research at sites 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 represent the disciplines of agronomy, animal science, economics, forestry, horticulture, land use planning, outdoor recreation, plant pathology, range science, resource policy and law, and soil science. For more information, visit [www.uaf.edu/snre/research/afes/](http://www.uaf.edu/snre/research/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 the U.S. Geological Survey, UAF, 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 fisheries and wildlife biology and management.

Wildlife research is directed toward habitat relationships, avian ecology, wildlife population dynamics, and the impact of northern development on wild animals and their habitats. Fisheries research focuses on the ecology and fisheries of Alaska freshwater ecosystems, and evaluation and development of cold-water fisheries techniques.

For more information, visit [www.akcfwru.uaf.edu](http://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 Athabaskan languages. ANLC publishes its findings in dictionaries, grammars, story collections and research papers. The Alaska Native Language Archive houses a valuable collection of manuscript materials in and on Alaska Native languages, including word lists and documentation dating to the late 1700s. The archive is available to scholars and students and is housed at the Rasmuson Library.

As part of the College of Liberal Arts, ANLC's teaching program includes 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 B.A. in Yup'ik language and culture teaches major courses entirely in the Yup'ik language.

For more information, visit [www.uaf.edu/anlc/](http://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 Extension, the Institute of Marine Science, the Institute of Arctic Biology and the Geophysical Institute.

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/](http://www.uaf.edu/aqc/).

### **ALASKA SEA GRANT**

Alaska Sea Grant is a partnership between the National Oceanic and Atmospheric Administration and the University of Alaska Fairbanks. Alaska Sea Grant is administered by the UAF School of Fisheries and Ocean Sciences.

Alaska Sea Grant enhances the wise use and conservation of Alaska's marine and freshwater resources through research, education and outreach.

ASG supports researchers and university graduate students contributing new knowledge related to healthy coastal ecosystems, sustainable fisheries and resilient coastal communities. Alaska Sea Grant also recruits students into career-building national and state scholarships and fellowships in marine policy, fisheries population dynamics and other marine fields.

Alaska Sea Grant Marine Advisory Program faculty are located in eight coastal communities and build partnerships that provide technical assistance to support economic development, marine literacy, workforce development, and resource management. More than 7,000 adults and youth attend workshops and presentations by ASG annually.

As part of its education mission, ASG supports marine literacy among K-12 teachers and students through curriculum and other learning resources and training. ASG produces publications, videos and website resources available via an online bookstore that help the public understand Alaska's diverse marine ecosystem. ASG also keeps scientists connected through community-based regional scientific conferences and through scientific symposia, including the international Lowell Wakefield Fisheries Symposium Series.

ASG is funded by UAF and NOAA, with support from various public and private partners.

For more information visit [www.alaskaseagrant.org](http://www.alaskaseagrant.org) or call 907-474-7086.

### **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](http://www.ankn.uaf.edu).

For more information, telephone 907-474-1902 or email [fycxcs@ankn.uaf.edu](mailto:fycxcs@ankn.uaf.edu).

### **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 sub-Arctic 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](http://www.cgc.uaf.edu) or call 907-474-5818.

### **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 are underway 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 capabilities for earth science support. In addition, the Alaska Volcano Observatory, the Alaska Earthquake Information Center, Alaska Climate Research Center and the Alaska Center for Unmanned Aircraft Systems Integration are located at the institute. More than 75,000 books, 350 journals and other specialized media are maintained at the Keith B. Mather Library.

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 Alaska, using geophysical data as the basis for decision-making tools. Examples include monitoring 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. 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 than 500 permanent field sites are operated throughout Alaska and are associated with the Poker Flat Research Range, the Alaska Earthquake Center, the Alaska Volcano Observatory and the Permafrost Research Laboratory.

For more information, visit [www.gi.alaska.edu](http://www.gi.alaska.edu) or call 907-474-7282.

### 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 Akasofu Building. For more information, call 907-474-6016 or visit [www.iarc.uaf.edu](http://www.iarc.uaf.edu).

### 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 policymakers knowledge to interpret, predict and manage biological systems through integration of research, student education and service to Alaska and the nation.

IAB research focuses on wildlife and conservation biology, including caribou, moose, polar bears and wildfowl; ecology, biogeochemistry, ecosystems and modeling of Arctic landscapes; climate change; physiology, including hibernation and thermogenesis; evolutionary biology; human, plant

and animal genetics; plant-animal interactions; and human health disparities, nutrition and physical activity using a community-based, participatory approach.

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. Toolik Field Station is an internationally recognized Arctic research station that annually hosts hundreds of scientists from around the world. The Center for Alaska Native Health Research investigates weight, nutrition and health in Alaska Natives. 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 IDeA Networks of Biomedical Research Excellence program seeks to enhance biomedical research infrastructure in Alaska and fund research and student training focused on the interface of health, disease and the environment in people and animals. The Alaska Cooperative Fish and Wildlife Research Unit, part of the U.S. Geological Survey, promotes research and graduate student training in the ecology and management of fish and wildlife. The Alaska Geobotany Center is dedicated to understanding northern ecosystems through GIS, remote sensing and field experiments. 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.

For more information, call 907-474-7412, visit [www.iab.uaf.edu](http://www.iab.uaf.edu) or follow @ArcticBiology on Twitter.

### 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 sub-Arctic waters.

The faculty provide expertise in chemical, geological and physical oceanography and marine biology. Instruction is carried out through a minor in marine science and 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.

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

Research facilities include laboratories on the Fairbanks campus; the Seward Marine Center, a major coastal facility in Seward; the Kasitsna Bay Laboratory, a marine biology field station on Kachemak Bay; and the 261-foot global class, ice-strengthened Research Vessel *Sikuliaq*. The Seward Marine Center supports a high-quality seawater system and excellent biological and chemical laboratories, and is the *Sikuliaq*'s home port. 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; Ocean Acidification Research Center; GAK1, Gulf of Alaska CTD Time Series; GOAIERP, Gulf of Alaska Integrated Ecosystem Research Program; RUSALCA, Russian-American Long-Term Census of the Arctic; and NEWNET/ORION, a radiation and climatological monitoring program through autonomous stations in Fairbanks, Seward, Nome, Kotzebue, Point Hope and Barrow. Laboratories and specialists cover areas including acoustics; algae, biological, chemical, fisheries, geological and physical 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 II and Arctic Health Research buildings on the west ridge of the Fairbanks campus. For more information, visit [www.ims.uaf.edu](http://www.ims.uaf.edu) or call 907-474-7229.

### **INSTITUTE OF NORTHERN ENGINEERING**

The Institute of Northern Engineering is the research enterprise for the College of Engineering and Mines. INE faculty and students are engineering solutions for the world's cold regions and beyond. The institute is home to many of the world's leading researchers in cold weather and cold climate science and engineering. INE research and support span the engineering disciplines, offering studies and expertise in energy production, modeling and testing of mechanical systems, and environmental engineering and hydrology, as well as Arctic infrastructure, and mining and petroleum development. INE also participates in many cross-institute endeavors.

The institute includes the Alaska Center for Energy and Power, Alaska University Transportation Center, Mineral Industry Research Laboratory, Petroleum Development Laboratory, and Water and Environmental Research Center. ACEP houses the Alaska Hydrokinetic Energy Research Center, and WERC serves as the home of the Alaska Stable Isotope Facility. External grant and research support for INE programs has been more than \$20 million annually since 2011. Most of INE's researchers are full-time faculty in the College of Engineering and Mines, allowing research results to reach the classroom quickly.

INE offers diverse interdisciplinary research opportunities, challenging students to tackle wide-ranging engineering topics. Students gain knowledge and experience through hands-on engagement, setting them apart in the engineering job market.

To get started with your northern engineering research or studies, visit [www.uaf.edu/ine/](http://www.uaf.edu/ine/) or call 907-474-5457.

### **JUNEAU CENTER, SCHOOL OF FISHERIES AND OCEAN SCIENCES**

The Juneau Center is home to nine UAF fisheries faculty members and about 60 graduate students enrolled in the M.S. and Ph.D. fisheries and marine biology programs. Four UAS biology and marine biology faculty hold joint appointments in the SFOS fisheries division and supervise UAF graduate students based at the Juneau Center.

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, marine policy, 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 and Ted Stevens Marine Research Institute, the U.S. Geological Survey's Glacier Bay Field Station, and the Alaska Department of Fish and Game's Mark, Tag and Age Lab.

The center is adjacent to the National Marine Fisheries Service Ted Stevens Marine Research Institute in Auke Bay. For more information, visit [www.sfos.uaf.edu/fishdiv/](http://www.sfos.uaf.edu/fishdiv/) or call 907-796-6441.

### **KODIAK SEAFOOD AND MARINE SCIENCE CENTER**

The Kodiak Seafood and Marine Science Center contributes scientific and technical expertise through teaching, research and service in fisheries, seafood science and technology, and marine biology. Faculty at KSMSC teach undergraduate and graduate classes in fisheries, seafood and marine biology, and provide informal education and training for industry, K-12 students and the public. KSMSC is the hub of applied seafood research for the state and also home to research related to marine mammal ecosystems, harmful algal blooms, and food science and marketing. Public service is provided through seafood and fishing industry consultations and partnerships with local organizations for economic development and increasing understanding of the local environment.

KSMSC faculty have expertise in fisheries, nutrition, food chemistry, food microbiology, marine mammal biology, seafood processing, seafood economics and seafood engineering. The Kodiak Center provides ready access to coastal and offshore marine systems in the Gulf of Alaska as well as freshwater streams and lakes.

The center is near the NOAA Kodiak Fisheries Research Center and the Alaska Department of Fish and Game. For more information, call 907-486-1500 or visit [www.sfos.uaf.edu/ksmsc/](http://www.sfos.uaf.edu/ksmsc/).

## UARCTIC

UAF is a founding member of UArctic (originally the University of the Arctic), a cooperative network of universities, colleges and other organizations committed to higher education and research in the North. The consortium's goal is to create a strong, sustainable circumpolar region by empowering northerners and northern communities through education and shared knowledge. As part of this network, UAF participates in research and teaching partnerships and is a member of the student exchange program north2north, which provides opportunities for students from UArctic member institutions to experience different northern regions firsthand, and to share experiences face-to-face by allowing students to study at other UArctic institutions. For more information visit [www.uaf.edu/uarctic/](http://www.uaf.edu/uarctic/).

## 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 Alaska 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.

In 2014, the museum began a five-year project to renovate the Gallery of Alaska. The current exhibit was installed in 1980 with minimal improvements in the intervening years. Since then, Alaska, the world and our understanding of it has changed. There are many new stories to tell. The new gallery will be immersive, allowing children and adults to engage with hands-on elements. By redesigning the casework and mounting techniques, the museum will also add to the sustained life of the collections. The new exhibits will be installed one section at a time, allowing the Gallery of Alaska to remain open to the museum's nearly 90,000 annual visitors. The museum is raising funds from local and private sources to complete the project by 2018.

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, and runs the museum store, featuring Alaska jewelry, books and Alaska Native artwork.

For more information, visit [www.uaf.edu/museum/](http://www.uaf.edu/museum/) or call 907-474-7505.



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Engineering majors Sarah La Belle, center, and Shyla Keays, right, enjoy the pleasant weather on campus during the first day of fall classes.

# 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 and 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

To be admitted to UAF, a student must:

1. **Submit an application for admission**  
Apply online at [www.uaf.edu/admissions/](http://www.uaf.edu/admissions/). Applications must be received before the published deadlines. There is no fee to apply for an occupational endorsement program. Paper applications can be submitted to the Office of Admissions and the Registrar.
2. **Submit official 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 meets program age requirements by the first day of the semester (see individual program descriptions for minimum age requirements).

## Program Completion

Occupational endorsement programs require between 9 and 24 credit hours that 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. Students should check with an advisor for the specific requirements for their program.

## 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](mailto:admissions@uaf.edu)  
Online: [www.uaf.edu/admissions/](http://www.uaf.edu/admissions/)  
Telephone: 907-474-7500  
Toll free: 800-478-1823  
Fax: 907-474-7097

# Applying for Admission: Certificate or Associate Degree Programs

## When to Apply

Applications for admission to certificate or associate degree programs are due no later than June 15 for fall semester, Nov. 1 for spring semester and 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 before the beginning of the semester in which they plan to enroll.

## How to Apply

To be admitted to UAF, a student must:

1. **Submit an application for admission**  
Apply online at [www.uaf.edu/admissions/](http://www.uaf.edu/admissions/). Applications must be received before the published deadlines, along with a \$40 nonrefundable application fee. The fee should be paid by check, credit card or money order to the University of Alaska Fairbanks. Please do not send cash. Paper applications can be submitted to the Office of Admissions and the Registrar.
2. **Submit official 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.
3. **Submit official 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 taken within the last two years for English and composition placement. Students will also need to submit ALEKS test scores taken within the last year for placement into math, DEVM or any course that requires a math prerequisite. Contact Testing Services at 907-474-5277 or your high school guidance office for information concerning the ACT Plus Writing, SAT or ACCUPLACER tests. Visit [www.uaf.edu/admitted/aleks/](http://www.uaf.edu/admitted/aleks/) to take the ALEKS test.

## INTERNATIONAL STUDENTS

See page 30 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.

Students under the age of 18 who will not have a high school diploma or GED before the start of their first semester are not admissible but may take courses as a nondegree student. Please note that in order to qualify for federal financial aid, students must have either a high school diploma or a GED.

## 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/nonregionally accredited 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 for placement in English or composition courses, and the ALEKS test for placement into math courses. Test results must be less than two years old for English placement and less than one year old for math placement. See Transferring Credits on page 32 for more information.

## HIGH SCHOOL STUDENTS

High school students may take classes at UAF. There are two enrollment options for students interested in certificate or associate degree programs: 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. Qualified applicants who are in their last year of high school or 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 approved all necessary credentials.

For additional program-specific application requirements, please see program descriptions starting on page 99.

### 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.

### READMISSION OF FORMER DEGREE STUDENTS

Undergraduate degree 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 two years, and
- they are continuing with the same degree program.

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 a new application for admission along with the \$40 application 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 and have taken at least a two-year break from classes. Students who withdrew from school or were dismissed for academic reasons may apply for readmission through the Fresh Start program 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.

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 interested in Fresh Start should contact the Office of Admissions and the Registrar.

### • Readmission of Service Members

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/veterans/](http://www.uaf.edu/veterans/).

## 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](mailto:admissions@uaf.edu)  
 Online: [www.uaf.edu/admissions/](http://www.uaf.edu/admissions/)  
 Telephone: 907-474-7500  
 Toll free: 800-478-1823  
 Fax: 907-474-7097

# 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 and May 1 for summer semester.

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

To be admitted to UAF, a student must:

### 1. Submit an application for admission

Apply online at [www.uaf.edu/admissions/](http://www.uaf.edu/admissions/). Applications must be received before the published deadlines, along with a \$50 nonrefundable application fee. The fee should be paid by check, credit card or money order to the University of Alaska Fairbanks. Please do not send cash. Paper applications can be submitted to the Office of Admissions and the Registrar.

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.

### 2. Submit official transcripts

To be considered official, transcripts must arrive in sealed envelopes from each institution attended.

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

**College transcripts** — Applicants who have college-level course work must send official college or university transcripts to UAF.

**International** — See page 30 for additional information.

### 3. Submit official 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.

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, ALEKS or other placement tests do not satisfy this requirement.

## INTERNATIONAL STUDENTS

See page 30 for additional information.

## Admission Requirements

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

### Option 1:

- have a high school diploma, and
- pass the 16-credit high school core curriculum (see Table 1) with a GPA of at least 2.5, and
- have a cumulative GPA of 3.0. No minimum ACT or SAT score is required, **OR**

### Option 2:

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

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

English	Math	Social Sciences	Natural/Physical Sciences	Foreign Language*
<b>High School Core Curriculum — Required for all freshmen; 2.50 GPA in core; 16 credits total, which must include:</b>				
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
<b>College of Engineering and Mines • College of Natural Science and Mathematics • School of Fisheries and Ocean Sciences • School of Natural Resources and Extension</b>				
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
<b>College of Liberal Arts • School of Management • College of Rural and Community Development • General Studies (undecided or exploratory)</b>				
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 is preferred.	3-4 cr	Same as high school core	Same as high school core

\* Recommended but not required.

### 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 of the 14 credits must satisfy baccalaureate core requirements.

### GENERAL STUDIES

Students accepted to bachelor's programs that do not select a major will be admitted as general studies students. 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 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 bachelor's 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 bachelor's degree program with fewer than 30 semester hours of transferable credit must also meet the freshman admission requirements. Admission status for students who have attended an unaccredited postsecondary institution will be determined on an individual basis. See Transferring Credits on page 32 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. The Alaska Higher Education Admission Decision program requires formal admittance to UAF. The other two enrollment options, Secondary Student Enrollment and TECH PREP, have specific registration requirements but do not require admission to UAF.

### 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 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 get a program application from the 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 bachelor's 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 bachelor's 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 bachelor's degree program may 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.

## After Acceptance

### CONDITIONAL AND FINAL ACCEPTANCE

Qualified applicants will receive a letter of acceptance once all required items are received and evaluated. Qualified applicants who are in their last year of high school or 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 reviewed 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

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 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 two years, and
- they are continuing with the same degree program.

Students should be aware that poor academic performance at other campuses in the UA system may affect academic standing upon their return to UAF. 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 application 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 they last attended, and who have taken at least a two year break from classes. 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.

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 129). 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 Service Members

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/](http://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](mailto:admissions@uaf.edu)  
 Online: [www.uaf.edu/admissions/](http://www.uaf.edu/admissions/)  
 Telephone: 907-474-7500  
 Toll free: 800-478-1823  
 Fax: 907-474-7097

# Applying for Admission: Graduate Degree Programs

## When to Apply

Applicants should apply to a graduate degree program at least six to nine months before the beginning of the semester in which they plan to enroll. Most departments require earlier submission of credentials for acceptance to their program. Contact the department for specific deadlines. The number of students accepted for graduate study is limited.

At the latest, applications for graduate admission with all supporting documentation must be received by June 1 for the fall semester and Oct. 15 for the spring semester. Earlier deadlines apply for international applicants.

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

To be admitted to UAF, a student must:

1. **Submit an application for admission**  
Apply online at [www.uaf.edu/admissions/](http://www.uaf.edu/admissions/). Applications must be received before the published deadlines, along with a \$60 nonrefundable application fee. The fee should be paid by check, credit card or money order to the University of Alaska Fairbanks. Please do not send cash. Paper applications can be submitted to the Office of Admissions and the Registrar.
2. **Submit official 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*  
See page 30 for additional information.
3. **Submit official test results**  
Not all departments require Graduate Record Exam scores if the student has earned a GPA of 3.0 or higher. Refer to the admission requirements of your prospective degree program to determine which tests are required.
4. **Submit resume/curriculum vitae**  
Include work and research experience, publications, patents, honors, professional and civic memberships, and foreign travel.
5. **Submit 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.
6. **Submit three 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.

### ADDITIONAL APPLICATION INFORMATION

- **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 Proposed Graduate Study Plan (available at [www.uaf.edu/inds/](http://www.uaf.edu/inds/)) and a comprehensive research proposal. Applicants must also obtain commitment from UAF faculty members to serve as an advisory committee. Contact the Graduate School for specific interdisciplinary procedures.
- **International Students**  
See page 30 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. 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, [uaf-grad-school@alaska.edu](mailto:uaf-grad-school@alaska.edu), or online at [www.uaf.edu/gradsch/](http://www.uaf.edu/gradsch/). Students with questions may also contact the WICHE Student Exchange Program at P.O. Box 9752, Boulder, CO 80301-9752, 303-541-0210, or <http://wiche.edu/wrgp/>.

## 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 their major. The undergraduate major should provide suitable preparation for continuation of studies in the field of choice. Some programs require the Graduate Record Exam or Graduate Management Admission Test 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.

If an applicant meets the minimum requirements for the university, the Office of Admissions and the Registrar sends the complete application to the academic department. 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, [uaf-grad-school@alaska.edu](mailto:uaf-grad-school@alaska.edu), or [www.uaf.edu/gradsch/](http://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, 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 should be sent to [admissions@uaf.edu](mailto:admissions@uaf.edu). Admission may be postponed for up to one calendar year with the approval of the academic department and the dean of the graduate school. 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](mailto:admissions@uaf.edu)  
 Online: [www.uaf.edu/admissions/](http://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: [uaf-grad-school@alaska.edu](mailto:uaf-grad-school@alaska.edu)  
 Online: [www.uaf.edu/gradsch/](http://www.uaf.edu/gradsch/)  
 Telephone: 907-474-7464

# Applying for Admission: International Students

## When to Apply

International students may apply for admission to associate, bachelor and graduate-level degrees. Applications for admission from international students are due no later than March 1 for the fall semester and Sept. 1 for the spring semester. For graduate applicants, it is important to note that certain departments maintain earlier deadlines.

International students must complete all UAF application requirements as well as meet requirements for U.S. immigration agencies. I-20s Certification of Eligibility for F-1 Status cannot be issued for programs that are offered only through distance delivery. I-20s will not be issued for the A.A.S. degree in professional piloting.

## Admission Requirements

More information regarding the process for application to associate, bachelor or graduate programs can be found in the Getting Started section of this catalog beginning on page 23.

### UNDERGRADUATE APPLICANTS

To be admitted to UAF, a student must:

1. Apply online at [www.uaf.edu/admissions/](http://www.uaf.edu/admissions/). The \$50 application 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. Paper applications can be submitted to the Office of Admissions and the Registrar.
2. Send secondary school and/or university transcripts to an approved credential evaluation agency and request a comprehensive course-by-course credential report. Visit [www.uaf.edu/admissions/apply/international/](http://www.uaf.edu/admissions/apply/international/) for a list of approved service providers. Transcripts from Canadian institutions (excluding Quebec) are exempt from this requirement; they may be sent directly from the issuing institution.
3. Submit certified official secondary school and/or university transcripts and English translations. It is required that official transcripts of all high school and/or college-level course work be signed and sealed by a registration official of the institution(s) attended.
4. Submit test scores from the SAT or ACT Plus Writing exam.
5. Submit official TOEFL or IELTS test scores.
6. Submit a copy of the student's passport identification page.

7. Complete UAF's financial statement form and provide supporting documentation showing adequate funding to cover all expenses at UAF, including round-trip transportation to Alaska.

### GRADUATE APPLICANTS

To be admitted to UAF, a student must:

1. Apply online at [www.uaf.edu/admissions/](http://www.uaf.edu/admissions/). The \$60 application 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. Paper applications can be submitted to the Office of Admissions and the Registrar.
2. Review your department's department-specific requirements and application deadlines.
3. Submit certified official university transcripts and English translations. To be considered official, transcripts must arrive in sealed envelopes from each institution attended. If the transcript does not show that a bachelor's degree has been or will be awarded, a diploma must also be sent.
4. Submit official GRE or GMAT test scores. Not all departments require GRE scores if the student has earned a GPA of 3.0 or higher. Refer to the admission requirements of your prospective degree program to determine which tests are required.
5. Submit a resume/curriculum vitae. Include work and research experience, publications, patents, honors, professional and civic memberships, and foreign travel.
6. Submit a 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.)
7. Submit three 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.
8. Submit official TOEFL or IELTS test results.
9. Submit a copy of the student's passport identification page.
10. Complete UAF's financial statement form and provide supporting documentation showing adequate funding to cover all expenses at UAF, including round-trip transportation to Alaska.

## Required Funding Amounts

The minimum estimated cost for one school year at UAF for an international student is \$32,855 for undergraduate students and \$32,240 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 is in Table 2. Students on an F-1 visa who are not from a UA sister city or province are not eligible for resident tuition. For international students who are residents of a sister city, the estimated cost for one school year at UAF is \$21,670 for an undergraduate and \$24,302 for a graduate student.

## Immigration Requirements

Once a student has been accepted to UAF, the Office of International Programs and Initiatives will issue a Form I-20, which must be presented at a U.S. embassy or consulate in the 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.

If a student is already in the United States on an F-1 visa, the SEVIS record may be transferred as long as the record is in SEVIS active status.

## 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. English proficiency may be demonstrated by:

1. A minimum TOEFL score of 79.
2. A minimum IELTS score of 6.5.
3. Completion of secondary education in Great Britain, New Zealand, Australia or Canada (excluding Quebec).

Requests for exception to this policy may be submitted via email to the Office of Admissions and the Registrar. Acceptable grounds for waiving this requirement may include:

1. Successful completion (C or higher) of a college-level, non-ESL English composition course.
2. A comparable score on another approved exam such as the ACT Plus Writing, SAT or ACCUPLACER exam.

TABLE 2 UA SISTER CITIES AND PROVINCES

Country	City or Province
Australia	Darwin
Canada	Inuvik, Northwest Territory and Whitehorse, Yukon Territory
China	Harbin, Heilongjiang Province
Great Britain	Whitby, England
India	Pune
Japan	Chitose, Hokkaido Prefecture, Kanayama, Nemuro, Noshiro, Obihiro, Saroma, Teshio
Korea	Inchon
Mongolia	Erdenet City
Norway	Hammerfest, Mo, Tromsø
Philippines	Camiling
Russia	Khabarovsk Region, Magadan, Mirnyy, Noglicki, Okha, Providenya, Vladivostok, Yakutsk, Yelisovo
Taiwan	Chiayi Township

## Request to Postpone

If applicants are unable to attend, they must notify the Office of Admissions and the Registrar and the Office of International Programs and Initiatives. Students may request to postpone their admission for up to one calendar year. For graduate applicants, acceptance is not guaranteed for a future semester. An updated financial statement and current supporting financial documents will be required from all students.

## 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](mailto:admissions@uaf.edu)  
 Online: [www.uaf.edu/admissions/international/](http://www.uaf.edu/admissions/international/)  
 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: [uaf-internationalprograms@alaska.edu](mailto:uaf-internationalprograms@alaska.edu)  
 Online: [www.uaf.edu/oip/](http://www.uaf.edu/oip/)  
 Telephone: 907-474-7677  
 Fax: 907-474-5979

# Transferring Credits

## 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 equated with UAF courses. See Table 3 for a list of substitutions within the University of Alaska system and Table 4 for substitutions from non-UA institutions.

UAF is a member of the Servicemembers Opportunity Colleges network. For additional information about the SOC program, see [www.uaf.edu/veterans/soc/](http://www.uaf.edu/veterans/soc/) or 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.
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, the Associate of Arts core and the Associate of Science core when officially accepted to a bachelor's, Associate of Arts or Associate of Science 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 institution will be considered as having satisfied the 100- and 200-level UAF general education (core) requirements.
7. Any transfer student who has completed the baccalaureate general education requirements at any regionally accredited four-year institution is considered to have completed the baccalaureate core requirements (excluding oral intensive and writing intensive) at UAF. The student is responsible for providing an official statement and documentation certifying GER completion at the previous institution.
8. Transfer credit is not included in computation of the UAF GPA except to determine eligibility for graduation with honors.
9. Class standing (e.g., freshman, sophomore) 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.

TABLE 3 UA SYSTEM 2015-2016 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 4 — Table of Substitutions: Non-UA Institutions or visit [www.uaf.edu/admissions/apply/transfer/](http://www.uaf.edu/admissions/apply/transfer/).

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
<b>COMMUNICATION (9 CR)</b>			
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 F121X, F131X or F141X	COMM 111, 235, 237 or 241	COMM 111, 235, 237, 241
<b>PERSPECTIVES ON THE HUMAN CONDITION (18 CR)*</b>			
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 101; HIST 101, 102, 121, 122, 131, 132, 341; HNRS 292; HS 220; INTL 101; JPC 101, 204; JUST 110, 251, 330, 375; LEGL 101; LSSS 111; PS 101, 102, 311, 351; PSY 111, 150, 200; SOC 101, 110, 201, 202, 251, 342, 351; SWK 106, 243; URS 121; WS 200	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, 360A, 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, 101E, 102A, 102B, 102C, 102E, 201; ASL 101, 102, 201, 202; CHIN 101, 102, 201, 202; FREN, GER, JPN, RUSS, SPAN 101, 102, 201, 202, 301, 302); LING 101; 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, RUSS, SPAN 101, 102 or other approved world languages); PHIL 101, 201
Aesthetics (3 cr)	ART/MUS/THR F200X, or HUM F201X, or ANS F202X	AKNS 215, 216; ART 160; DNCE 170; MUS 121, 124, 215, 216, 221, 222; THR 111	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, 305	PHIL 301
<b>FOREIGN LANGUAGE OPTION</b>			
*OR complete 12 credits from the Perspectives on the Human Condition options above, plus 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.			
<b>MATHEMATICS (3 CR)</b>			
Mathematics (3-4 cr)	MATH F113X, F122X, F151X, F152X, F156X, F222X*, F232X*, F251X*, F252X*, or F253X*; STAT F200X * or any math course having one of these as a prerequisite	MATH 121, 151, 152, 155, 221, 251, 252, or 253; STAT 252, 253, 307	MATH 113, 151 (or higher-level mathematics course for bachelor's degree); STAT 107, 273 (or higher-level statistics course for bachelor's degree)
<b>NATURAL SCIENCES (8 CR)</b>			
Complete any two 4-cr natural science courses with lab sections	ATM F101X; BIOL F100X, F101X, F103X, F104X, F115X, F116X, F120X, F213X, F214X; CHEM F100X, F103X, F104X, F105X, F106X; GEOG F111X; GEOS F100X, F101X, F106X, F112X, F120X, F125X; MSL F111X; PHYS F102X, F103X, F104X, F115X, F175X, F211X, F212X, F213X	(OR complete UAA requirement of 7 cr, one of which must be a lab course) <b>Lab Courses:</b> ASTR 103 & 103L, 104 & 104L; BIOL 102 & 103, 108, 111, 112, 178 & 179; CHEM 103 & 103L, 104 & 104L, 105 & 105L, 106 & 106L; ENVI F211 & 211L; GEOL 111 & 111L, 115 & 115L, 178 & 179, 221; LSIS 102, 201, 202; PHYS 123 & 123L, 124 & 124L, 211 & 211L, 212 & 212L <b>Non-lab Courses:</b> ASTR 103, 104; BIOL 102, 178, 200; CHEM 104, 105, 106; CPLX 200; ENVI 211; GEOG 111; GEOL 111, 115, 178; LSIS 101; PHYS 101, 123, 124, 211, 212	(OR complete UAS requirement of 7 cr, one of which must be a lab course) <b>Lab Courses:</b> BIOL 103, 104, 105, 106, 111, 112; CHEM 103, 105, 106; ENVS 102; GEOG 102; GEOL 104; PHYS 102, 103, 104, 211, 212 <b>Non-lab Courses:</b> ANTH 205; ASTR 225; CHEM 100; GEOL 105; OCN 101; PHIL 206

## 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 before 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

3). 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 38-credit requirements of the UAF baccalaureate core (excluding the writing and oral intensive upper-division requirements) meets the general education requirements at UAA and UAS.

For more information about transfer credit visit [www.uaf.edu/admissions/apply/transfer/](http://www.uaf.edu/admissions/apply/transfer/).

## Alternate Ways to Earn Credit

### 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

TABLE 4 **TABLE OF SUBSTITUTIONS: NON-UA INSTITUTIONS**

This table describes courses accepted by transfer to UAF from institutions outside the University of Alaska system and that may substitute for UAF's core curriculum. Students transferring from either UAA or UAS should consult Table 3 — UA System 2015-2016 Table of Substitutions, or visit [www.uaf.edu/admissions/apply/transfer/](http://www.uaf.edu/admissions/apply/transfer/).

Core Curriculum Courses	Transfer Courses
MATH F113X—Concepts and Contemporary Applications of Mathematics, MATH F122X—Precalculus for Business and Economics, MATH F151X—College Algebra for Calculus, MATH F152X—Trigonometry or MATH F156X—Precalculus	a 100-level or above mathematics course having a prerequisite of at least two years of high school algebra
MATH F222X, F232X, F251X, F252X, F253X or 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 and Nat Sciences	the second half of the introductory composition series at the 100 level or above
COMM F121X—Introduction to Interpersonal Communication, 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. Nonlab 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	introductory courses in different social sciences
ECON/PS F100X—Political Economy	
ANTH/SOC F100X—Individual, Society and Culture	
ENGL/FL F200X—World Literatures	an introductory course in the humanities
ART/MUS/THR F200X, HUM F201X, ANS F202X—Aesthetic Appreciation	an introductory course in the arts which does not stress skills acquisition
BA F323X, COMM F300X, JUST F300X, NRM F303X, PHIL F322X, PS F300X—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

and for the College-Level Examination Program (CLEP). The office also does private proctoring. For more information and registration materials, contact Testing Services, 211 Gruening Building, 907-474-5277, [uaf-testing-dept@alaska.edu](mailto:uaf-testing-dept@alaska.edu) or [www.uaf.edu/testing/](http://www.uaf.edu/testing/).

### CREDIT FOR NATIONAL EXAMS

There are several ways to earn college credit by receiving a passing score on a national exam. For any of the following exam options, grades are not computed in the UAF GPA. Credit received for exams 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 is awarded to current or previously enrolled degree students at UAF. Rules that apply to transfer courses (including the tables of substitutions) also apply to course credit received through a national exam. The credit for national exam options are briefly outlined here.

- **College-Level Examination Program**

CLEP is a national testing program that awards college credit for some introductory courses. The exams cost \$120 each (costs subject to change) and are administered by appointment only.

See Table 5 for a list of CLEP general and subject exams accepted at UAF. To register for a CLEP exam or for more information, contact UAF Testing Services at 907-474-5277 or [uaf-testing-dept@alaska.edu](mailto:uaf-testing-dept@alaska.edu). The following criteria apply to CLEP exams:

1. Students can earn up to 6 semester credits upon successful completion of a General CLEP exam in the discipline of college mathematics, humanities, natural sciences or social sciences/history. Students who have earned less than 6 credits in the discipline (or 3 credits for mathematics), from any source, will be awarded the difference in credits upon successful completion of the exam. Students who already have 6 or more credits in the discipline (or 3 credits for mathematics) will not receive credit for the exam. (General CLEP exams are listed in bold font in Table 5.)
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 Subject exam for that course.
4. The minimum passing score for approved CLEP exams is 50, with the exception of the following 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, semester IV minimum 63.

- **College Board Advanced Placement Exams**

UAF grants advanced credit for exam results of 3 or higher, or a score of 4 or 5 (effective fall 2016) for Calculus AB or BC, on the College Board (CEEB) Advanced Placement Tests (see Table 6). These exams are normally taken during the junior or senior year in high school.

To receive CEEB advanced placement credit, ask 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 approval from the Department of Foreign Languages and Literatures) 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 [uaf-testing-dept@alaska.edu](mailto:uaf-testing-dept@alaska.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 course work 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 department approval. DSST exams cost \$120 each (costs subject to change). To register for a DSST exam, contact UAF Testing Services at 907-474-5277, or email [uaf-testing-dept@alaska.edu](mailto:uaf-testing-dept@alaska.edu) about the availability of DSST testing.

- **International Baccalaureate**

The International Baccalaureate Diploma Program is a two-year curriculum for students ages 16 to 19 and is similar to the final year of secondary school in Europe. UAF grants advanced credit, with a waiver of fees, for IB higher-level and some standard-level exams on which students have earned a score of 4 or higher, or a score of 5 or higher for mathematics (see Table 7). To receive IB credit, students should submit an official copy of their IB exam results to the Office of Admissions and the Registrar.

TABLE 5 COLLEGE-LEVEL EXAMINATION PROGRAM (CLEP)  
EXAMS CURRENTLY ACCEPTED

Examination Name	UAF Course Equivalent	Credits
Algebra (College)	MATH F122X or F151X	3/4
American Government	PS F101	3
Calculus	MATH F251X	4
Chemistry, General	CHEM F105X/F106X	8
College Composition	ENGL F111X	3
<b>College Mathematics*</b>	<b>Mathematics elective credits</b>	<b>3</b>
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 and Development	PSY F240	3
<b>Humanities*</b>	<b>Humanities elective credits</b>	<b>6</b>
<b>Natural Sciences*</b>	<b>Natural sciences elective credits</b>	<b>6</b>
Precalculus	MATH F151X/F152X	4/3
Principles of Macroeconomics	ECON F202	3
Principles of Microeconomics	ECON F201	3
Psychology (Introductory)	PSY F101	3
<b>Social Sciences/History*</b>	<b>Social sciences elective credits</b>	<b>6</b>
Sociology (Introductory)	SOC F100X	3
Spanish (College level)	SPAN F101/F102 SPAN F201/F202	5/5 3/3
Western Civilization I	HIST F101	3
Western Civilization II	HIST F102	3

X = Course meets baccalaureate core requirement.

\* Students who have earned less than 6 credits in the discipline (or 3 credits for mathematics), from any source, will be awarded the difference in credits upon successful completion of the exam. Students who already have 6 or more credits in the discipline (or 3 credits for mathematics) will not receive credit for the exam.

Students should consult Table 3 or Table 4 (the tables of substitutions) to determine what other courses may meet baccalaureate core requirements.

Must have minimum score of 50 in order to receive UAF credit, with the exception of foreign language exams where score determines number of credits awarded.

TABLE 6 COLLEGE BOARD ADVANCED PLACEMENT (AP)  
EXAMS CURRENTLY ACCEPTED

Examination Name	UAF Course Equivalent	Credits
Art: History	ART F261/F262	6
Art: 2-D, 3-D or Drawing	Art electives*	6
Biology	BIOL F115X/F116X	8
Chemistry	CHEM F105X/F106X	8
Chinese Language and Culture	CHNS F101/F102	10
Computer Science A	CS F201	3
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	Natural sciences elective (meets core requirement)	4
European History	HIST F101/F102	6
French Language and Culture	FREN F101/F102	10
German Language and Culture	GER F101/F102	10
Government and Politics: Comparative	PS F201	3
Government and Politics: U.S.	PS F101	3
Human Geography	GEOG F101	3
Italian Language and Culture	Foreign Language electives	8
Japanese Language and Culture	JPN F101/F102	10
Latin	Foreign Language electives**	8
Math: Calculus AB	MATH F251X	4
Math: Calculus BC	MATH F251X/F252X	8
Music Theory (score of 3)	MUS F103	3
Music Theory (score of 4 or 5)	MUS F131/F133	5
Physics 1	PHYS F103X	4
Physics 2	PHYS F104X	4
Physics C: Mechanics	PHYS F211X	4
Physics C: Electricity and Magnetism	PHYS F212X	4
Psychology	PSY F101	3
Spanish Language and Culture	SPAN F101/F102	10
Spanish Literature and Culture	Spanish electives (200 level) SPAN F201	2 3
Statistics	STAT F200X	3
U.S. History	HIST F131/F132	6
World History	HIST F100X	3

X = Course meets baccalaureate core requirement.

\* Portfolios may be submitted to the Art Department for further evaluation.

\*\* Does not satisfy Perspectives on the Human Condition Core requirement. Students should consult Table 3 or Table 4 (the tables of substitutions) to determine what other courses may meet baccalaureate core requirements.

Must have minimum score of 3 in order to receive UAF credit. Effective fall 2016, a score of 4 or 5 will be required for Calculus AB and BC.

**TABLE 7 INTERNATIONAL BACCALAUREATE EXAMS CURRENTLY ACCEPTED**

Examination Name	Level	UAF Course Equivalent	Credits
Biology	HL	BIOL F115X/F116X	4/4
Chemistry	SL	CHEM F103X/F104X	4/4
Chemistry	HL	CHEM F105X/F106X	4/4
Classical Greek	HL	Humanities electives*	6
French	SL	FREN F101/F102	5/5
French	HL	FREN F101/F102 FREN F201/F202	5/5 3/3
German	SL	GER F101/F102	5/5
German	HL	GER F101/F102 GER F201/F202	5/5 3/3
Japanese	SL	JPN F101/102	4/4
Japanese	HL	JPN F101/102 JPN F201/F202	5/5 5/5
History of Europe & the Islamic World	HL	HIST F100X substitute HIST elective	3 3
Latin	HL	LAT F101/F102*	3/3
Language A1 (English)	HL	ENGL F111X and ENGL elective	3 3
Mathematics	HL	MATH F251X	4
Mathematics w/Series & ODE option	HL	MATH F251X MATH F252X	4 4
Mathematics and Further Math	HL SL	MATH F251X, F252X, MATH elective	8 3
Philosophy	HL	PHIL F102	3
Physics	SL	PHYS F103X	4
Physics	HL	PHYS F103X/F104X	4/4
Russian	SL	RUSS F101/102	5/5
Russian	HL	RUSS F101/102 RUSS F201/202	5/5 4/4
Social & Cultural Anthropology	SL HL	ANTH F100X substitute ANTH F242	3 3
Spanish	SL	SPAN F101/102	5/5
Spanish	HL	SPAN F101/102 SPAN F201/202	5/5 3/3
Theatre	SL	THR F200X	3
Theatre	HL	THR F200X THR elective	3 1
20th-C World History: History of Africa	HL	HIST F100X substitute HIST elective	3 3
20th-C World History: History of the Americas	HL	HIST F100X substitute HIST elective	3 3
20th-C World History: History of Asia & Oceania	HL	HIST F100X substitute HIST elective	3 3
20th-C World History: History of Europe & the Middle East	HL	HIST F100X substitute HIST elective	3 3
Visual Arts	HL	ART F105/F161	3/3

X = Course meets baccalaureate core requirement.

Students should consult Table 3 or Table 4 (the tables of substitutions) to determine what other courses may meet baccalaureate core requirements.

\* Does not satisfy Perspectives on the Human Condition core requirements. If an international baccalaureate exam is not in this table, contact the Office of Admissions and the Registrar at registrar@uaf.edu for more information. Must have minimum score of 4 (or score of 5 in mathematics) to receive UAF credit.

## 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 cannot duplicate a course for which credit has already been granted or in which the student is currently enrolled. It is up to the discretion of the department and instructor to decide which courses can be challenged, the testing method and grading procedures. 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/](http://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.

## UAF ADVANCED PLACEMENT CREDIT

### • English

Students with ACT or SAT scores that place them in English F211X or F213X (see Table 10) may receive local advanced placement credit for English F111X upon completion of English F211X or F213X with a grade of C or better.

Students who have received transfer credit that substitutes for English F211X or F213X with a grade of C or better and who meet the ACT or SAT test score requirement may also receive credit for English F111X.

To receive this credit, students must submit the Application for English F111X Credit form to the Office of Admissions and the Registrar. The form is available at the Office of Admissions and the Registrar or the English Department.

### • 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.

## CREDIT FOR PRIOR LEARNING

The Academic Advising Center administers the credit for prior learning program, wherein students may earn undergraduate credit based on university-level 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 32) that do not need credit for prior learning review. For further information or assistance, contact the Academic Advising Center, 510 Gruening Building, 907-474-6396 or [uaf.advising@alaska.edu](mailto:uaf.advising@alaska.edu). The credit for prior learning student handbook is available at [www.uaf.edu/advising/cpl/](http://www.uaf.edu/advising/cpl/).

## COMPETENCY TESTING

Students with appropriate background experience may complete certain 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 \$30, is designed to test or verify a student's knowledge of standard library functions, services and organization. While no credit is awarded for passing this exam, a score of at least 70 percent will fulfill the core curriculum requirement for LS F101X and LS F100X. Please contact Testing Services at 907-474-5277, [uaf-testing-dept@alaska.edu](mailto:uaf-testing-dept@alaska.edu) 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 B.B.A. degree at UAF. The CSP, offered daily in Testing Services for \$30, is designed to test or verify a student's 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 907-474-5277, [uaf-testing-dept@alaska.edu](mailto:uaf-testing-dept@alaska.edu) 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 course work 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 Testing Services at 907-474-5277, 211 Gruening Building, or the Department of Communication at 907-474-6591 or 503 Gruening.

# 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 pages 489-490 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. Registration instructions for the Fairbanks campus are provided in the UAF registration guide, available at <http://uaonline.alaska.edu> or [www.uaf.edu/register/](http://www.uaf.edu/register/).

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

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

## ACADEMIC ADVISING IS REQUIRED

Academic advising is an important part of planning for your education. Degree 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. Nondegree 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. Nondegree students who have been academically disqualified should 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 71, for more information.

## NONDEGREE STUDENTS

Anyone who wants to attend classes at UAF as a nondegree student may register as long as they have the appropriate permissions. Students under the age of 18 may take courses as a nondegree student. Current high school students should refer to the High School and Secondary School Students section below.

TABLE 8 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 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	<i>Fall 2015:</i> Ninth Friday after the first day of instruction for the semester <i>Spring 2016:</i> First Friday after spring break	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.
Appeal for late withdrawal	After the last day for student-initiated withdrawals	30 class days after the beginning of the next regular semester	Reviewed by a campus appeals committee

Add/drop, total withdrawal and credit/no-credit requests must be completed 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.

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

It's important for potential graduate students to understand that credits earned as a nondegree 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 199).

### HIGH SCHOOL AND SECONDARY SCHOOL STUDENTS

High school and secondary students may take classes at UAF. One program, Alaska Higher Education Admission Decision, 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 chair. 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. Please note that in order to qualify for federal financial aid, you must have either a high school diploma or a GED.*

- **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.

## Course Placement

### PLACEMENT REQUIREMENTS

Many UAF courses require placement. All students planning to take courses with specific placement requirements must meet those requirements before registering for those courses. Specific writing, reading and math placement requirements are listed in the sections below.

Students need mathematics placement at DEVM F105 or above and ENGL F111X placement to register for core science courses.

### PLACEMENT TESTS

Test results are required for first-time degree or certificate students, transfer students with fewer than 30 transfer credits, or students planning to take 100-level English, reading, mathematics, natural sciences and general education courses. UAF mathematics placement test results must be on file with the Office of Admissions and the Registrar or the local regional campus registration office before you can register for DEVM, math, statistics or general education science classes. 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. Your ability to register may be blocked if you have not submitted required test scores.

Students who enroll in any course without meeting placement or prerequisite requirements may be dropped or withdrawn from the course through the faculty-initiated withdrawal process.

Writing placement exams must be taken within two calendar years before the start of a course; mathematics placement exams must be taken within one calendar year prior. Students enrolling in developmental or lower-division core courses must have completed any prerequisite courses within two calendar years of their enrollment.

### 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- or better in all prerequisite courses. An instructor also has the right to waive a course prerequisite if the instructor documents that the student possesses the background required to succeed in the class. Students who take a course at a higher level than a corresponding prerequisite course required for a degree program are not exempt from taking that required course.

### WRITING

Placement into writing courses requires either prerequisite course credit or a standardized placement test that measures academic skills such as critical thinking and reading. The score from any of the tests (see Table 10) places the student in the appropriate writing class. A writing sample, given on the first day of class, may modify this placement. Degree or certificate students placed in developmental writing or reading courses should register for them during their first semester. These courses help students gain competencies necessary to succeed in college-level courses. If the student's standardized test scores are below the minimums in Table 10 and if the student's high school cumulative GPA is 3.0 or higher, the student may be given permission to enroll in English F111X by the director of university writing or rural campus English/Arts and Letters faculty.

On the basis of test scores, students may be required to take developmental English and/or developmental studies courses. These courses help students gain competencies necessary for success in college-level courses.

## MATHEMATICS

Mathematics course placement varies 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.) The UAF mathematics placement test is used to determine math placement. Minimum test scores for placement in math and developmental math courses are listed in Table 9.

Students who have limited access to or limited experience with the Internet should contact the Department of Mathematics and Statistics or the Department of Developmental Education for assistance.

## 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. With approval of the Department of Foreign Languages and Literatures, students may enroll in the level of a language at which they are competent, based on prior experience.

## Adding, Dropping and Withdrawing from Classes

Information about the add/drop process can also be found at <http://uaonline.alaska.edu> and in the registration guide at [www.uaf.edu/register/](http://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

TABLE 9 MATH, STATISTICS AND DEVELOPMENTAL MATH PLACEMENT SCORES

COURSES	ALEKS PPL
MATH F232X, MATH 251X	78-100
MATH F211, MATH F222X	70-100
MATH F152X, MATH F156X	65-77
STAT F200X	60-100
MATH F122X, MATH 151X	55-77
DEVM F105, DEVM F105N, MATH F113X (DEVM F071, DEVM F105G, DEVM F105H, DEVM F105J)	30-54
DEVM F055 (DEVM F055D, DEVM F055E, DEVM F055F, DEVM F061, DEVM F062, HLTH F116, TTCH F131)	15-29
DEVM F054 (DEVM F056, ABUS F155)	0-14

Note: DEVM F051 is appropriate for students preparing for the High School Qualifying Exam in Alaska or those needing a review of basic math skills. DEVM F065 assists students in reviewing and reinforcing course concepts covered by DEVM F054–DEVM F105N.

Students, in consultation with their academic advisor or course instructor, may opt to take a course lower than their placement.

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 8.

## NONATTENDANCE 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 waitlists, 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 waitlist.

Because of the high demand for composition (ENGL F111X, 211X, 213X, 313 or 414) and basic speech (COMM

TABLE 10 ENGLISH, DEVELOPMENTAL ENGLISH AND DEVELOPMENTAL STUDIES COURSE PLACEMENT SCORES

COURSES	ACT ENGLISH + READING Total Combined Score	SAT WRITING + CRITICAL READING Total Combined Score	ACCUPLACER SENTENCE SKILLS + READING COMPREHENSION Total Combined Score	ASSET FORM B2 WRITING SKILLS + FORM B2 READING SKILLS Total Combined Score	UAF WRITING SAMPLE* FOR USE WITH ASSET FORM B2
ENGL F211X <sup>1</sup> or ENGL F213X <sup>1</sup>	60-72	1340-1600	N/A	N/A	N/A
ENGL F111X*	36-59	860-1330	170-240	82-107	19-25
DEVE F109	30-35	760-850	140-169	76-81	16-18
DEVE F104*	26-29	680-750	110-139	70-75	12-15
DEVE F060	18-25	540-670	80-109	66-69	9-11
DEVS F105	26-29	680-750	110-139	70-75	12-15
DEVS F052	18-25	540-670	80-109	66-69	9-11
Adult Basic Education**	2-17	400-530	0-79	46-65	0-8

Note: DEVE F068 is a writing support group tutorial class, recommended based on the student's needs for writing assistance along with any DEVE or ENGL writing course listed in the table. Students may take up to 3 credits of DEVE F068 per semester for as many semesters as needed.

<sup>1</sup> Students with ACT or SAT scores that place them in ENGL F211X or F213X may receive local advanced placement credit for ENGL F111X upon completion of ENGL F211X or F213X with a grade of C or better. To receive this credit, students must submit the Application for English F111X Credit form to the Office of Admissions and the Registrar.

\* ENGL F111X-plus pairs a section of ENGL F111X with DEVE F068. Qualifying students are those who have a combined ACCUPLACER 135-169 score and are referred by their academic advisor to the Director of University Writing to interview for the program.

\*\* For an Adult Basic Education program listing, go to [www.jobs.alaska.gov/abe/abe\\_dir.pdf](http://www.jobs.alaska.gov/abe/abe_dir.pdf)

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. The last day you can withdraw from a class is the ninth Friday after the first day of instruction for fall 2015, and the Friday after spring break beginning in spring 2016. For specific dates, see the academic calendar at the back of this catalog. Fees and tuition are not automatically refunded for W grades.

- **Total Withdrawal from All 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/forms/](http://www.uaf.edu/reg/forms/) 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 at the back 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, fire or 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 30 class days after the beginning of the next regular semester. Forms for an appeal for late withdrawals are available at [www.uaf.edu/reg/forms/](http://www.uaf.edu/reg/forms/), through the Office of Admissions and the Registrar in Signers' Hall on the Fairbanks campus, or through local campus student services offices. Once received, the appeal will be evaluated by a campuswide 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- 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 for fall 2015, and before the Friday after spring break beginning spring 2016. A grade of W will appear on a student's academic record for faculty-initiated withdrawals.

## Directed and Individual Study

**Directed study** courses allow a student to contract with an instructor to enroll individually in a course that is listed in the catalog but in a semester in which the course is not offered in the regular schedule.

For example, a directed study proposal may be approved if the course is not being offered that semester and the student needs to complete the course for graduation. The title for the directed study course will include DS.

**Individual study** courses provide students with opportunities to improve their knowledge in areas of study not listed in the current catalog. A student who requests or is advised to undertake such an individual study should present a brief proposal and syllabus to the appropriate faculty member. The syllabus must be attached to an individual study form. This requirement does not apply to directed study courses. An individual study course number will end in 97.

Registration for directed and individual study courses is not available via the web. To register for a directed or individual study course, download the request form from [www.uaf.edu/reg/forms/](http://www.uaf.edu/reg/forms/) or pick up a copy at the Office of Admissions and the Registrar. Submit the completed form to the Office of Admissions and the Registrar.

## 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](mailto:registrar@uaf.edu)  
Online: [www.uaf.edu/reg/](http://www.uaf.edu/reg/)  
Telephone: 907-474-7500



UAF photo by JR Ancheta.

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Kai Zhang listens to a lecture about Taiwanese culture during Summer Sessions' cultural night kickoff lecture.

# 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 important matters. Email is often the only way some information is distributed, so it's important that you regularly check your university email address or forward email from your UAF address to an address you check frequently.

The university automatically assigns each student an official UAF email account when the student enrolls (except students whose primary registration is through Bristol Bay, Chukchi, Interior Alaska, Kuskokwim or Northwest campuses). If you have multiple UAF email accounts, you should forward them to the one you check most often. You're responsible for knowing — and when appropriate, acting on — the contents of all university communications sent to your official UAF email account.

All notifications regarding waitlisted courses will be sent to your student-preferred email address. To receive these important notifications be sure your email is current and you have selected your preferred student email at UAOnline.

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/](http://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 or more credits

Transfer students are given class standing based on the number of transfer credits accepted by UAF. Nondegree 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 part-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 yearlong correspondence study courses are not included in the study load computation.

*Graduate students* — A graduate student 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 part-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

level 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.

Under the credit/no-credit option, students may take undesigned 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 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 “A” (including A+ and A-) indicates a thorough mastery of course content and outstanding performance in completion of course requirements.
- B “B” (including B+ and B-) indicates a high level of acquired knowledge and performance in completion of course requirements.
- C “C” (including C+ and C-) indicates a satisfactory level of acquired knowledge and performance in completion of course requirements.
- D “D” (including D+ and D-) indicates a minimal level of acquired knowledge and minimal performance in completion of course requirements. This grade does not satisfy requirements for courses in the major, minor, core or graduate programs.
- F “F” indicates failure to meet a minimal level of understanding of course content and/or performance in completion of course requirements. 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, with the grading system noted in the class schedule.
- CR Indicates credit was given under the credit/no-credit option.
- DF **Deferred** — This designation is for courses such as theses and special projects that require more than one semester to complete. It indicates that course requirements cannot be completed or that institutional equipment breakdown resulted in noncompletion by the end of the semester. Credit may be withheld without penalty until the course requirements are met within an approved time. **For undergraduate courses, the grade will automatically change to a W (withdrawn) after two years unless an extension is requested and granted by the registrar.**
- 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 [2.0] 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 completion of the I.** The I grade is not computed in the student's GPA until it has been changed to a regular letter grade by the instructor or until one year has elapsed, at which time it will be computed as an F. A senior cannot graduate with an I grade in either a university or major course requirement. To determine a senior's GPA for honors at graduation, the I grade will be computed as a failing grade.

**NB No Basis** — Instructors may award a No Basis 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. It cannot be removed by later completing outstanding work.

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

**NG Non-Graded** — Used for sections that are not graded, usually continuing education units (CEUs) or lab sections. Has no impact on GPA calculation.

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 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.

Noncredit 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 nondegree 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.

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 baccalaureate core, major, minor or degree requirements, or as a prerequisite for another course

\*\* Minimum grade possible to earn credit for a course  
Note: Some degree programs require C or higher for their major or minor requirements. Check program listings for your degree requirements.

TABLE 11 **EXAMPLE OF GRADE POINT AVERAGE COMPUTATION**

Course	Credits	Grade	Credits × Grade points per credit	= Grade points
BIOL F213X	4	A	4 cr × 4 pts	16
COMM F131X	3	D+	3 cr × 1.3 pts	3.9
ENGL F111X	3	C-	3 cr × 1.7 pts	5.1
MATH F151X	3	B-	3 cr × 2.7 pts	8.1
HIST F131	3	F	3 cr × 0 pts	0
<b>Total</b>	<b>16</b>			<b>33.1</b>
				<b>33.1 grade points ÷ 16 credits = 2.07 GPA</b>

## Attendance

UAF is committed to student success and academic integrity. UAF faculty expect that students are committed to academic achievement. You are expected to adhere to the class attendance policies set by your instructors.

**General Absences:** If you miss class, you are responsible for conferring with your instructor as soon as possible concerning your absence, and to discuss the possibilities for arranging alternative learning opportunities. Note that some departments drop students who miss the first day of class and who fail to obtain their instructor's prior approval for the absence.

**UAF-Sanctioned Absences:** If you are scheduled to miss class for an academic requirement or to represent UAF in an official capacity (e.g., NCAA athletic competition, music performance), you must notify your instructor in writing by the first Wednesday of the semester in which the absences will occur. The notification should list all scheduled absences and bear the signature of a UAF school official.

Instructors are encouraged to make reasonable accommodations for students who miss class to participate in these official, UAF-recognized activities. However, it is your responsibility to follow up the notification of absence by discussing alternative learning opportunities with your instructors before the end of the drop/add period (typically the second Friday of the semester). Doing so will allow you to drop the class and to add another if, after a good faith effort, you and your instructor cannot arrange for comparable learning opportunities that would enable you to be successful in the class.

## 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 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:

- 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.
- Be registered at UAF with a minimum of 6 graduate or 400-level credits per year unless on approved leave of absence.
- Abide by all parts of the Student Code of Conduct.
- Have a current graduate study plan or an advancement to candidacy submitted and approved unless you are within the first year of graduate study.
- 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.

- 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 student in a UAF undergraduate degree or certificate program 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 or better, or the dean's list with a GPA of 3.5-3.89. 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 semester and/or cumulative GPA falls below 2.0 after any semester, including the summer session, 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 should work with an academic advisor to prepare an academic plan for achieving a higher GPA. 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 return 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 cumulative GPA fall 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 nondegree 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
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 course work 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 from the dean of the Graduate School.

## Appeal of Academic Decisions

The University of Alaska appeals policies can be found in the Regents' Policy and University Regulation Part IX — Student Affairs, Chapter 09.03, Student Dispute Resolution, available online at [www.alaska.edu/bor/policy-regulations/](http://www.alaska.edu/bor/policy-regulations/).

### GRADE ERROR POLICY

A grade other than an incomplete or deferred submitted by the instructor after a course is completed is the final grade and becomes part of the student's permanent academic record. A grade will not be changed unless the instructor made a legitimate error in calculating the grade. If an error has occurred, contact the instructor immediately. Grade error corrections must be received within 30 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. There are only two valid reasons for appeal of a grade: (1) an error in calculation of the grade, or (2) arbitrary and capricious grading. Evidence of either must be documented for an appeal to be successful. Merely wanting a higher grade is not sufficient grounds to justify an appeal.

Appeals must be received on or before the 30th day of instruction 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 at [www.uaf.edu/reg/forms/](http://www.uaf.edu/reg/forms/) 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 30 class days after the beginning of the next regular semester.

To appeal academic decisions, the student 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 offices 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. For the detailed "Appeals Policy For Academic Decisions" go to [www.uaf.edu/uafgov/faculty-senate/policies-procedures/appeals-policy-for-academ/](http://www.uaf.edu/uafgov/faculty-senate/policies-procedures/appeals-policy-for-academ/).

## ACADEMIC APPEALS ADVISOR

The academic appeals advisor helps undergraduate students with the policies and procedures associated with grade appeals, appeals policy for academic decisions other than assignment of grades, academic petitions and financial aid satisfactory progress appeals.

The academic appeals advisor is a professional academic advisor in the Academic Advising Center. The academic appeals advisor helps students determine whether the appeal or petition is appropriate, reviews documentation relevant to the appeal or petition, and navigates the process for the appeal or petition submission. In the preceding sentence, “appropriate” does not refer to whether an appeal is likely to be successful, but rather whether the appeal falls within the purview of the grade or academic decisions appeal process. The academic appeals advisor does not guarantee the appeal or petition will be successful and will not comment on the likelihood of acceptance. Students are responsible for writing the appeal or petition, for gathering and recording relevant documentation, and for submitting the appeal or petition with the proper signatures.

Contact the Academic Advising Center at 907-474-6396 or [uaf-advising@alaska.edu](mailto:uaf-advising@alaska.edu).

## 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 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 yours 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. Students will attribute the source of information not original with themselves (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/](http://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 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 they believe is inaccurate or misleading. A student may ask the university to amend the student's education 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 government 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 helping another university official perform his or her tasks. A university official has a legitimate educational interest if the official needs the student's education record 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' email addresses
- i. Hometown, city and state

Students may inform the Office of Admissions and the Registrar in writing that they do not give permission for the university to release their directory information, or they 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/](http://www.alaska.edu/bor/policy-regulations/).

- **Honors and Scholarships**

Names of students receiving awards or scholarships or who appear on the dean's list or chancellor's list are released to the media unless a student has requested that no directory information be released. Instructions for electing FERPA confidentiality are available at [www.alaska.edu/student-services/ferpa/elect/](http://www.alaska.edu/student-services/ferpa/elect/).



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Students take advantage of bright spring weather to try out their climbing skills on the new ice wall near the Student Recreation Center on the Fairbanks campus.

# 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 12).

- 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.

TABLE 12 2015-2016 TUITION

	Resident	Nonresident
100-200-level courses	\$183/credit	\$649/credit
300-400-level courses	\$221/credit	\$687/credit
500-level courses	varies	varies
600-level courses	\$423/credit	\$864/credit

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

### RESIDENT AND NONRESIDENT 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 the U.S. armed forces, and their dependents, who are eligible for Veterans Affairs 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 Western Regional Graduate Program;
- students enrolled in 4 or fewer credit hours within the UA system during a semester;
- students from other states or provinces whose public universities waive nonresident tuition surcharges for Alaska residents, or who are from foreign cities and

provinces with established Alaska 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 nonresident if within two years prior to applying for residency they:

- were absent from Alaska for an aggregate of more than 120 days for 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 before 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.

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.pdf](http://www.alaska.edu/bor/policy/05-10.pdf). For more information and applications, students should contact the Office of Admissions and the Registrar.

## Basic Student Fees

### ASUAF

**Cost:** \$42 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 Associated Students of the University of Alaska Fairbanks represents student views and concerns to the university administration, board of regents and Alaska Legislature. The ASUAF fee also partially funds publication of the UAF student newspaper, the *Sun Star*; the student-managed ASUAF Concert Board; and KSUA, the student radio, as well as other multimedia. Other services provided through ASUAF include a half-hour attorney consultation, academic travel funding, international student identification cards, subsidized student club activities and much more. Contact ASUAF at 907-474-7355 or visit [www.uaf.edu/asuaf/](http://www.uaf.edu/asuaf/).

### ATHLETICS

**Cost:** \$10 per credit hour (to a maximum of \$120 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 postseason competitions. For more information regarding event/ticket policies visit [www.alaskanook.com](http://www.alaskanook.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

At publication time, the university was considering discontinuing sponsorship of a student insurance plan for all but international and graduate students on a stipend. Please visit [www.uaf.edu/chc/](http://www.uaf.edu/chc/) for more information.

### PARKING PERMIT

**Cost:** Single vehicle, \$41 for 8 or fewer credits; \$78 for 9 or more credits; \$143 annual permit

Multivehicle — With any of the permit options, you can register up to four vehicles for an additional \$10. You will receive a hang tag that will allow you to park one vehicle on campus at a time. (Campus residents may not purchase the multivehicle option. Employees are not eligible to purchase parking permits at student rates.)

**Who pays:** Students who park a vehicle at any on- or off-campus UA, UAF or Community and Technical College location are required to have a parking permit displayed on the vehicle at all times, including evenings.

TABLE 13 **BASIC STUDENT FEES**  
(per semester unless otherwise indicated)

ASUAF	\$42
Athletics	\$10/credit to a maximum of \$120
Course Fees	varies
<b>Parking Permit</b>	
8 credits or fewer	\$41
9 or more credits	\$78
annual permit	\$143
spring/summer	\$143
multivehicle	additional \$10
<b>Student Health and Counseling Center</b>	
Fall or spring semester	\$110
Summer semester (6 or more credits)	\$70
<b>Student Recreation Center</b>	\$75
<b>Student Sustainability</b>	\$20
<b>Technology</b>	\$5/credit to a maximum of \$60
<b>Transportation</b>	
1-3 credits	none
4 or more credits	\$15
<b>UA Facilities</b>	
fall 2015	\$4/credit
spring 2016	\$6/credit
<b>UA Network</b>	
4 percent of tuition	varies
<b>Wood Center Student Life</b>	
1-8 credits	none
9 or more credits	\$35

*Note: All fees are subject to change.*

Costs are based on the combined total credit hour enrollment at UAF, Community and Technical College, e-Learning & Distance Education, or any class held at a UAF location where credit is given through another location.

**What's covered:** Parking in permit-required and general-use lots/spaces at any on- or off-campus UA, UAF or Community and Technical College location in Fairbanks

**How to order your permit:** Request your permit through UAF's online parking system at [www.uaf.edu/finserv/bursar/parkingservices/](http://www.uaf.edu/finserv/bursar/parkingservices/). Select the type of parking permit(s) needed, your delivery option and payment method. You may instantly print a two-week temporary permit for use until your permit arrives in the mail or you pick it up.

**How to pay:** Complete your permit purchase at [www.uaf.edu/finserv/bursar/parkingservices/](http://www.uaf.edu/finserv/bursar/parkingservices/). Payment options are MasterCard, Visa, Discover or "student account," if you have added parking to your student account. You may also pay for the permit at UAOnline or at the Bursar's Office in Signers' Hall.

**How to acquire permit:** Depending on the method chosen, you may pick up the permit at the location indicated at the time of purchase, or if the mail option was chosen, it will be mailed to you. Permits may always be picked up at the Bursar's Office in Signers' Hall. Bring your current state vehicle registration with you to ensure correct information for your file.

It is the responsibility of all students parking a vehicle on any UAF property (on or off campus) to be

knowledgeable of UAF parking regulations, available online at [www.uaf.edu/finserv/bursar/parkingservices/](http://www.uaf.edu/finserv/bursar/parkingservices/). For more information, call 474-7384 or email [uaf-bursar@alaska.edu](mailto:uaf-bursar@alaska.edu).

### STUDENT HEALTH AND COUNSELING CENTER

**Cost:** \$110 per fall or spring semester; \$70 summer

**Who pays:** Fall and spring semesters — students enrolled in 9 or more on-campus credits (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 or more on-campus credits (optional for students enrolled in fewer 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 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 Bursar's 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 (correspondence classes do not count towards this total). Students enrolled in 3-8 credits who want access to the Student Recreation Center can pay the access fee 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. Anyone under the age of 18 using the SRC and its facilities must be accompanied by a parent or guardian whose minimum age is 21, unless he or she is a full-time student. Call 907-474-5886 for more information.

### STUDENT SUSTAINABILITY

**Cost:** \$20 per semester

**Who pays:** Students enrolled in 3 or more Fairbanks section credits (Fairbanks or Community and Technical College sites)

**What's covered:** The Student Sustainability fee is a student-initiated fee that funds energy-efficiency programs and renewable energy projects or other sustainability issues. Preference is given to projects that reduce UAF's nonrenewable energy consumption at the Fairbanks campus and CTC sites. For more information visit [www.uaf.edu/sustainability/rise/currentproposals/](http://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:** \$15 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 throughout campus and to various university facilities off campus.

### UA FACILITIES FEE

**Cost:** fall semester 2015: \$4 per credit;

spring semester 2016: \$6 per credit

**Who pays:** All undergraduate and graduate students, including those enrolled in eLearning or distance education courses.

**What's covered:** The UA facilities fee is assessed to all undergraduate and graduate students to address the capital reinvestment for university facilities and academic equipment. Capital reinvestment funds construction that modernizes university classrooms, laboratories, residence halls and other buildings so students have learning and living facilities that enhance the academic experience.

### UA NETWORK FEE

**Cost:** 4 percent of tuition

**Who pays:** All students

**What's covered:** The UA network charge covers rapidly rising costs, especially in the maintenance and enhancement of the universitywide technology infrastructure. The 4 percent network charge is applied on a per-credit-hour basis (rounded to the nearest dollar) to tuition, nonresident surcharges if applicable, and fees in lieu of tuition for credit and non-credit courses. The minimum network charge per course is \$7.

### WOOD CENTER STUDENT LIFE

**Cost:** \$35 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, Winter Carnival and SpringFest as well as student activities and projects.

## Other Fees

### APPLICATION FOR ADMISSION

**Cost:** \$40-\$60

**Who pays:** Applicants to 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

**TABLE 14 OTHER FEES**  
(per use unless otherwise indicated)

<b>Application for Admission</b>	
Certificate or associate degree	\$40
Baccalaureate	\$50
Graduate	\$60
<b>Application for Graduation</b>	\$50 (\$80 if late)
<b>Campus Housing</b>	
Residence halls, per semester	\$2,030-\$3,315*
Fairbanks campus family housing, per month	\$1,150-\$1,640**
Kuskokwim Campus housing	Contact campus
<b>Credit by Examination</b>	\$40/credit
<b>Credit for Prior Learning</b>	\$50 plus \$10/credit
<b>Duplicate Tuition/Fees Receipt</b>	\$5/copy
<b>eLearning &amp; Distance Education</b>	\$25/credit
<b>Graduate Student Reinstatement</b>	\$50
<b>Late Add/Late Registration</b>	\$50
<b>Late Payment Fees</b>	\$35; \$100, \$150
<b>Late Placement Test or Guidance Test</b>	\$5
<b>Meal Plans, per semester</b>	\$570-\$2,160
<b>New Student Orientation (Fairbanks area)</b>	\$115 fall \$35 spring
<b>Payment Plan</b>	\$30-\$75
<b>Post Office Box</b>	\$45/semester; \$90/annual; \$30/summer only
<b>Records Duplication</b>	\$0.25/page
<b>Reinstatement Fee</b>	\$100
<b>Returned Check Fee</b>	\$30
<b>Textbooks (approximate)</b>	\$250-\$1,100/semester
<b>Transcripts</b>	
Electronic, \$12; paper, \$15	\$12-\$15
Expedited paper	\$30

All fees are subject to change

\* Plus one-time application fee of \$40 and a refundable \$315 damage deposit

\*\* Plus one-time application fee of \$75 and a refundable \$600 damage deposit

graduation. Application deadlines are Oct. 15 for fall; Feb. 15 for spring and June 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:** \$355 deposit (\$40 nonrefundable application fee; \$315 refundable damage deposit)

Double rooms	\$2,030
Single rooms*	\$2,485
Double room/single occupancy*	\$2,990
Cutler Apartment Complex	\$2,282-\$3,315**

\* Extremely limited availability

\*\* Includes winter break

**Fairbanks campus family housing**

**Cost:** \$75 nonrefundable application fee, \$600 damage deposit (\$300 due when you are assigned a housing unit; \$300 due at check-in)

One- to three-bedroom apartments: \$1,150-\$1,640

**How to apply:** Send a completed application and application fee to the Department of Residence Life. Applications are available online. 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, uaf-housing@alaska.edu or [www.uaf.edu/reslife/](http://www.uaf.edu/reslife/).

**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.)

**Kuskokwim Campus housing**

For information about campus housing at the Kuskokwim Campus in Bethel, visit [www.bethel.uaf.edu](http://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

**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.

**ELEARNING & DISTANCE EDUCATION**

**Cost:** \$25 per credit hour

**Who pays:** Students enrolled in an eLearning & Distance Education course

**What's covered:** The fee pays for academic and advising support, online student resources, exam proctoring services, technology upgrades, and enhancements to course delivery.

**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 registration 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 waitlisted, or

- you change from one section to a different section of the same course, or
- you add graduate thesis or research credits, or
- you add a course to replace a canceled course in which you were previously enrolled, or
- you are moved to a lower or higher level of a course (e.g., MATH F151X to DEVM F105) due to instructor's recommendation.

This fee is refundable only if all classes for which you have registered are canceled. See the Registration Guide at [www.uaf.edu/register/](http://www.uaf.edu/register/) for the procedure for adding a class.

**What's covered:** Processing of late payments

### LATE PAYMENT FEES

**Cost:** \$100 for first; \$150 for second; \$35 per month for late payment plan payments

**Who pays:** All students who have missed the fee payment deadline and have a balance of \$300 or more. An additional \$150 fee will be added to accounts 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:** \$570-\$2,160

**Who pays:** All students living in a residence hall are required to purchase a meal plan, with the exception of graduate students and residents living in Cutler Apartment Complex and the Sustainable Village. UAF also offers meal plans to students not living on campus. For more information on meal plan options and plan details please review the Dining Services program terms and conditions. All prices are per semester.

**What's covered (per semester):** Meal plans are combinations of block meals and Munch Money. Block meals are used for all-you-care-to-eat dinners at Dine Forty-nine and as cash equivalency up to \$8 at any Fairbanks campus dining location from 4:30 p.m. until closing. Munch Money is used like cash at all dining locations and most vending machines on campus.

All unused block meals expire at the end of each semester. Any remaining Munch Money from the fall semester will be added to the spring meal plan, but expires at the end of the academic year after May 9, 2016. Unused meals and Munch Money will not be refunded. See page 69 for details of specific meal plans.

Applications to purchase meal plans are available at [www.uaf.edu/dining/](http://www.uaf.edu/dining/). Forms may be submitted electronically from the website or sent to Dining Services via email at [uaf-dining@alaska.edu](mailto:uaf-dining@alaska.edu) or P.O. Box 75815, Fairbanks, AK 99775.

*Note: The Wood Center food court is closed for campus holidays.*

### NEW STUDENT ORIENTATION

**Cost:** \$115 for fall semester, covers all programs except special Outdoor Adventures activities; \$10 for one-day fall transfer student orientation, and \$25 (plus \$10 for each additional guest) for two-day fall family orientation. \$35 for spring orientation.

**Who pays:** Any new student may participate in New Student Orientation on the Fairbanks campus. NSO is required for all first-time bachelor's degree students (regardless of the number of earned college credits) and international students (undergraduate F-1 and international exchange J-1 status). Domestic transfer students are also encouraged to attend.

**What's covered:** All materials, sessions, general entertainment and meals not included in student meal plans

### PAYMENT PLAN

**Cost:** \$30-\$75 depending on when you sign up. Discount only applies to online enrollment via UAOnline.

**Who pays:** Students 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/finserv/bursar/](http://www.uaf.edu/finserv/bursar/) for more information.

### PLACEMENT TEST FEE

**Cost:** \$25

**Who pays:** Undergraduate students taking the ALEKS PPL mathematics placement assessment

**What's covered:** Mathematics course placement assessment and six-week prep and learning module to place, practice, improve and enroll. Up to four retests may be taken.

### POST OFFICE BOX

**Cost:** \$45 per box per semester, \$90 annual, \$30 summer only

**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 in Constitution Hall. USPS mail is delivered on campus to post office boxes only, not to street addresses. The fee can be paid at the campus post office, at UAOnline, or at the Bursar's Office in Signers' Hall.

**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."

### REINSTATEMENT FEE

**Cost:** \$100

**Who pays:** Students dropped from classes due to nonpayment will be charged \$100 to have classes reinstated

**What's covered:** Reinstatement processing

**RETURNED CHECK FEE**

**Cost:** \$30

**Who pays:** If a check is returned for any reason, a hold will be placed on the student’s account which will prevent the student from registering, viewing grades, participating in graduation activities and receiving transcripts until the check clears and a \$30 fee is paid.

**What’s covered:** Processing returned checks

**TEXTBOOKS**

**Cost:** Varies according to course load. You can expect to pay about \$250-\$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

**TRANSCRIPTS**

**Cost:** \$12-\$30

Electronic: \$12

Paper: \$15

Expedited paper: \$30

**Who pays:** Anyone who requests their own transcripts from the Office of Admissions and the Registrar

**What’s covered:**

- **Official transcripts** can be issued electronically (secure PDF delivery to an email address) or on special transcript paper in a sealed envelope sent by U.S. mail. Official transcript requests are handled by Avow Systems Inc. (accessible via UAOnline) and by the Office of Admissions and the Registrar. Electronic transcripts can be delivered within minutes of the request as long as there are no holds on the student account. Processing time for paper transcripts is normally three to five business days. Transcript requests are processed as they are received and cannot be held for grades or degrees.
- **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 pickup or can be mailed to the student only.

**Paying Tuition and Fees**

Students are not considered registered for any classes until all tuition and fees are paid or other payment arrangements have been made by the fee payment deadline. 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 in your classes; instead the payment will be applied toward your outstanding balance.

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.

A \$30 charge and a hold will be placed on your account if your check is returned. This will prevent you from registering, viewing grades, receiving transcripts and graduation activity.

**CONSEQUENCES OF NOT PAYING**

Failure to pay in full or make other payment arrangements by the fee payment deadline may result in cancellation of your class schedule. UAF may withhold transcripts, grades and other services, and cancel meal plans and housing, if you do not pay your financial obligations. If the university takes such action, *you will still be responsible for your account balance in full.*

Registration may be withheld from any student who is delinquent in paying any amount due to the university. The registration process is not complete until the student has paid all fees and charges due. UAF may drop you from your courses after the fee payment deadline if you owe a balance to the university. A \$100 reinstatement fee will be charged to re-enroll in any dropped courses.

**FAILURE TO MEET FINANCIAL OBLIGATIONS**

University policy requires a financial hold be placed on your student account if you fail to meet your financial obligations. The hold will prevent any registration, transcript or graduation activity.

Past due accounts will be sent to a collection agency. Interest, late fees and/or collection costs will be added to your account. Past due balances may be reported to a local credit bureau. The university is authorized to garnish Alaska Permanent Fund Dividends for payment of past due accounts.

**TUITION WAIVERS**

- **Senior Citizen Tuition Waiver**  
UA Board of Regents policy waives regular tuition for Alaska residents at the age of eligibility for 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 age-eligible to receive full Social Security retirement benefits; and
  - there is space (i.e., no waitlist) in the class or classes you want.

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 for at least six months to be eligible and must maintain a cumulative GPA of 2.0 for undergraduate courses and 3.0 for graduate courses. 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/finserv/bursar/](http://www.uaf.edu/finserv/bursar/).

## 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 nonresident 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. Students have until the third Friday of the semester to drop classes and receive a 100 percent refund. The parking decal fee will be refunded in full if the student returns the parking decal at the time of withdrawal.
  - b. If a 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.*
  - c. 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 on or after the sixth 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

Financial aid will be disbursed to student accounts 10 days before the first day of class, and the Bursar's Office will begin processing refunds at that time. Contact the Bursar's Office for an advance if you need your funds for books and supplies. Refund processing is automatic for students who officially drop courses by the published refund deadlines. Remember to return parking permits if you drop during the 100 percent refund time.

All refunds are processed electronically or by mail. The Bursar's Office does not issue refund checks for amounts less than \$10. It is your responsibility to check your account and contact the Bursar's Office to receive your refund as cash

or to apply it to your PolarExpress card as a nonrefundable payment.

If you paid tuition and fees by credit card only, the card will be credited up to the amount charged.

If your tuition was paid through external sources such as financial aid, federal loans, scholarships or grants, you will receive your refund as a check sent to your mailing address of record or direct deposited in your bank account.

Once processed by the Bursar's Office, direct deposit takes three to five business days to disburse to your bank account.

Your refund is subject to federal regulations. If you receive a refund due to dropped classes or a total withdrawal, you may no longer qualify to receive scholarships or financial aid. In that case, the funds may be returned to the lender or grantor pursuant to all applicable rules and regulations.

If you paid by cash or check, a refund check will be sent to your mailing address of record or direct deposited in your bank account. If you notify the Bursar's Office that you have not received the check due to an incorrect address, a *fee of \$18.50 will be charged for all checks reissued due to a stop-pay request by the student*. Please be sure we have your current mailing address.

If you paid your tuition and fees by check, refund processing will begin after your check has cleared the bank.

*Any balance owed to the university will be deducted from your refund.*

Students who drop during the 100 percent refund period and want to maintain health insurance coverage should contact the Student Health and Counseling Center at 474-7043.

### DIRECT DEPOSIT OF REFUNDS

Enrolling in direct deposit allows your refunds to be electronically deposited into your bank account. It's simple, safe and convenient. Enrollment is available through our secure self-service website. Sign up for direct deposit of your refund through UAOnline (<http://uaonline.alaska.edu>) by following these steps:

- At the "Student Services & Accounting Information" menu select the "Direct Deposit Enrollment" link.
- Select "1st time setup of direct deposit"
- Select the account type
- Enter the bank routing code
- Enter account number
- Re-enter account number
- Select "Submit"

### EXCEPTION TO POLICY: APPEAL FOR REFUND OF TUITION

Appeals for refund of tuition are exceptions to policy and are only approved in events that are unanticipated and unavoidable. Approval is not automatic, and you need to provide documented evidence to support your request (physician's note, letters of support from instructors, etc.). Acceptable unanticipated and unavoidable reasons may include 1) death in immediate family; 2) serious illness or injury of student or immediate family member; and 3) factors outside of the student's control (e.g., fire, flood). Work-related issues,

personal hardships, changing your mind about college, poor academic performance, disciplinary withdrawal, not receiving expected financial assistance or failure to read UAF's published documents are considered to be the result of personal choices and actions and will not be considered.

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/finserv/forms/](http://www.uaf.edu/finserv/forms/), through the Bursar's Office in Signers' Hall on the Fairbanks campus or at CTC. Once received, the appeal will be evaluated by a campuswide 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 Bursar's 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 58.

Any refund of room charges will be based upon the days remaining in the semester.

### **MEALS**

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

## **Where to Get More Information**

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### **Office of the Bursar**

University of Alaska Fairbanks

130 Signers' Hall

P.O. Box 757640

Fairbanks, AK 99775-7640

Email: [uaf-bursar@alaska.edu](mailto:uaf-bursar@alaska.edu)

Online: [www.uaf.edu/finserv/bursar/](http://www.uaf.edu/finserv/bursar/)

Telephone: 907-474-7384

Fax: 907-474-5898

# 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 UAF 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 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/](http://www.uaf.edu/finaid/). The Financial Aid Office is in 107 Eielson. Contact Financial Aid at 907-474-7256, toll free at 888-474-7256, or at [uaf-financialaid@alaska.edu](mailto:uaf-financialaid@alaska.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 noncitizen (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/](http://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. Have earned a high school diploma, GED or equivalent.

## How to Apply for Financial Aid

The forms to apply for federal, state and UAF financial aid programs are available at the Financial Aid Office or at [www.uaf.edu/finaid/](http://www.uaf.edu/finaid/).

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

FAFSA forms may be completed at [www.fafsa.ed.gov](http://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.

## Costs of Attending UAF

The information in Table 15 for a typical full-time undergraduate student for the school year will help you 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*	\$6,814	\$6,814
Books, supplies	\$1,400	\$1,400
Room and board**	\$10,500	\$8,380
Transportation	\$2,000	\$ 400
Misc./personal	\$2,250	\$2,250
TOTAL	\$22,964	\$19,244

\* Estimate includes Alaska resident tuition costs for freshmen/sophomores. Includes Wood Center student life, student government, technology, transportation, UA facilities, UA network, athletics, Student Recreation Center and health center fees. Does not include health insurance, parking, travel or special costs associated with international or exchange students. Add \$13,980 for nonresident tuition. Costs are subject to change.

\*\* Double room and meal plan

Standard budgets do not always fit everyone. Financial aid staff 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 receives 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 the office has received this report, students will receive an email 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 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 and scholarship 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 graduated 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 a college or career readiness test, enroll at least half time, remain in good standing, and have qualifying education costs remaining after using all other nonloan 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](http://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.

- **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 submitted at <http://uaonline.alaska.edu>. The deadline is Feb. 15. For information telephone 907-474-7687, email [sdfnd@alaska.edu](mailto:sdfnd@alaska.edu) or visit [www.alaska.edu/foundation/](http://www.alaska.edu/foundation/).

- **Army ROTC Scholarships**

The U.S. Army awards four-year scholarships to high school students 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 a monthly stipend for living expenses ranging from \$300-\$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](mailto:rotc@uaf.edu).

- **Bureau of Indian Affairs 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-\$3,000 or more each year. The average grant at UAF is \$1,600. More information on BIA grants can be obtained from the BIA Regional Office, 1675 C Street, Anchorage, AK, 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 by April 15 and 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. A federal processor will send applicants a student aid report indicating whether they qualify. Federal Pell Grants award up to \$5,775 for the 2015-2016 academic year.

- **Federal Supplemental Educational Opportunity Grant**

This grant is for exceptionally needy undergraduate students. Award amounts range from \$600-\$1,000 each year.

- **Student Support Services Grants**

Student Support Services offers scholarships to qualified program participants who have made use of the SSS academic support services and are on a limited income. 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/sss/](http://www.uaf.edu/sss/) for more information.

- **Alaska Advantage Grant**

The Alaska Advantage 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-\$1,000 per academic year. Full-time awards range from \$1,000-\$3,000 per academic year.

- **Western Undergraduate Exchange Award**

UAF participates in the Western Undergraduate Exchange administered by the Western Interstate Commission for Higher Education. 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 nonresident 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 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/](http://www.uaf.edu/admissions/).

*Note: Students attending any campus of the University of Alaska system under the Western Undergraduate Exchange 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 nonresident tuition policy on page 52.*

## 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 199.

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 [www.uaf.edu/gradsch/](http://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 the federal government. 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 interest accrues while in school. A student may receive subsidized federal loans for up to 150 percent of his/her program's published length. If a student exceeds this time frame, his/her loans will lose the interest subsidy and interest will begin to accrue on those loans. Loan repayment calculations are available at [www.finaid.org](http://www.finaid.org).

Students must be enrolled in at least 6 credits to qualify for a state or federal loan. Yearly limits for dependent students are \$5,500 for first-year students, \$6,500 for second-year students and \$7,500 for upper-level undergraduates. Independent students may borrow, including the subsidized federal loan, up to \$9,500 as first-year students, \$10,500 as second-year students and \$12,500 as third- or fourth-year students. Graduate students may borrow \$20,500. The interest rate varies annually and is capped at 8.25 percent.

The Federal Parent Loan for Undergraduate Students 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 offers both federal and state loan programs. These loans are available to all students attending UAF. Through its federal

component, Alaska Advantage offers Stafford (subsidized and unsubsidized) and PLUS loans. State loans include the Alaska Supplemental Education Loan, the Family Education Loan and the Winn Brindle Scholarship Loan.

Students seeking an Alaska Supplemental Education Loan, or ASEL, must apply using the Free Application for Federal Student Aid 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 Winn Brindle Scholarship loan can be used only for specific fields of study. For information, please contact the Alaska Commission on Postsecondary Education, 3030 Vintage Blvd., Juneau, AK 99801, 800-441-2962 or [www.state.ak.us/acpe/](http://www.state.ak.us/acpe/).

Applicants must apply each year. 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. Loans are processed within seven to 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 Bursar's 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-\$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](http://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 offices advise and monitor the educational progress and status of veterans who attend UAF using VA educational benefits. They also help 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/va-educational-benefits/](http://www.uaf.edu/veterans/va-educational-benefits/). If you are unsure whether you are entitled to GI Bill benefits, contact the Department of Veterans Affairs in Muskogee, Okla., at 888-442-4551 (888 GI BILL 1) or [www.gibill.va.gov](http://www.gibill.va.gov).

Specific questions regarding vocational rehabilitation should be directed to the Fairbanks Vet Center, 540 Fourth Ave., Suite 100, Fairbanks, AK 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/forms/](http://www.uaf.edu/veterans/forms/), or visit our office at 107 Eielson, call 907-474-6391, toll free at 888-474-7256 or email [uaf-financialaid@alaska.edu](mailto:uaf-financialaid@alaska.edu).

## Remaining Eligible for Aid

Students receiving financial aid are required to maintain satisfactory academic progress. Undergraduate students must satisfactorily complete a minimum of 67 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/](http://www.uaf.edu/finaid/).

## Payment to the Student

Disbursement of financial aid is usually in equal amounts. Students are given half 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 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. 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 July**  
Complete federal loan promissory note and entrance counseling at [www.studentloans.gov](http://www.studentloans.gov). 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  
107 Eielson Building  
P.O. Box 756360  
Fairbanks, AK 99775-6360  
Email: [uaf-financialaid@alaska.edu](mailto:uaf-financialaid@alaska.edu)  
Online: [www.uaf.edu/finaid/](http://www.uaf.edu/finaid/)  
Telephone: 907-474-7256  
Toll free: 888-474-7256



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Fellow Skarland Hall resident Quinn Verfaillie visits with freshman Hailley Myers in her fourth-floor room.

# Housing

## Single-Student Housing

Your educational experience at UAF will be one of the great adventures of your life. The 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 fosters close friendships and academic achievement, helps you develop individual leadership ability and provides 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 Mount McKinley, the tallest peak in North America.

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

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

- cable television service
- optional local telephone service
- wireless and high-speed connections
- laundry facilities
- gender-inclusive housing (pilot program)
- trained staff on call 24 hours
- more than 400 programs each year

### ELIGIBILITY

All 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 requires that students be registered for a minimum of 6 in-class credit hours (online or distance education classes do not apply) to live in campus housing.

### APPLICATION PROCESS

Applications are available through admissions upon admittance to UAF, through Residence Life upon request or online at [www.uaf.edu/reslife/](http://www.uaf.edu/reslife/). Applicants must send \$355 (\$315 deposit, \$40 nonrefundable application fee) with the signed housing application. Upon acceptance, Residence Life will send 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 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 55. All room and board costs are subject to change. Students whose housing applications have been accepted will be given the opportunity to withdraw (less the application fee) if rates increase after they apply. Contact Residence Life about residence hall fees. Questions about the board plan should be directed to 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 about meal plans to 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:

Cancellation	Housing	Forfeit Deposit?	Dining
<b>Fall 2015</b>			
Before Aug. 1	100% refund	No	100% refund
Aug. 1-29	100% refund	Yes	100% refund
Aug. 30-Sept. 11	90% refund	Yes	100% or prorated refund based on actual usage
Sept. 12-25	75% refund	Yes	75% refund
Sept. 26-Oct. 9	50% refund	Yes	50% refund
Oct. 10-23	25% refund	Yes	25% refund
After Oct. 23	No refund	Yes	No refund
<b>Spring 2016</b>			
Before Dec. 1	100% refund	No	100% refund
Dec. 1-Jan. 11	100% refund	Yes	100% refund
Jan. 12-22	90% refund	Yes	100% or prorated refund based on actual usage
Jan. 23-Feb. 5	75% refund	Yes	75% refund
Feb. 6-19	50% refund	Yes	50% refund
Feb. 20-March 4	25% refund	Yes	25% refund
After March 4	No refund	Yes	No refund

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 — to foster academic and personal growth. Recreational lounges typically have televisions, couches, tables, chairs and pool tables or pingpong 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 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.

### **EDGE PROGRAM**

The Education, Development, Growth and Experience 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 who live on campus. EDGE halls have live-in tutors and twice the number of resident advisors as other halls. Alcohol is prohibited in 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 and the Sustainable Village. 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. Space is limited and is available on a first-come, first-served basis. The winter break fee for Cutler Apartments and the Sustainable Village 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-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/](http://www.uaf.edu/reslife/)). Applicants should return the completed form as soon as possible with a nonrefundable \$75 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.

### **PET POLICY**

Residents of family, faculty and staff housing may keep fish, dogs, cats and small caged animals (including hamsters, gerbils and mice — limit of two small caged animals per household). No other animals may be kept as pets in campus housing. Visit the Residence Life website at [www.uaf.edu/reslife/](http://www.uaf.edu/reslife/) for details about the application process. Applying to keep a pet does not guarantee approval.

### **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. See the cancellation/termination section of your agreement for more detailed information.

### **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 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.

### 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 at 907-474-7043, [uaf-sh-cc@alaska.edu](mailto:uaf-sh-cc@alaska.edu) or [www.uaf.edu/chc/](http://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, AK 99775-6860  
Email: [uaf-housing@alaska.edu](mailto:uaf-housing@alaska.edu)  
Online: [www.uaf.edu/reslife/](http://www.uaf.edu/reslife/)  
Telephone: 907-474-7247  
Fax: 907-474-6423

# Dining Services

## The UAF Dining Experience

UAF Dining offers a welcoming, affordable dining experience for Fairbanks residential and commuter students. With six locations on the Fairbanks campus, you will find something to satisfy all your dining needs. All of them accept cash, BearBucks, Munch Money and credit cards. Please visit [www.uaf.edu/dining/](http://www.uaf.edu/dining/) for more information on each location.

### MEAL PLAN OPTIONS

Meal plans are combinations of block meals and Munch Money. Block meals are used for all-you-care-to-eat dinners at Dine Forty-nine and as cash equivalency up to \$8 at any Fairbanks campus dining location from 4:30 p.m. until closing. Munch Money is used like cash at all dining and most vending locations on campus.

Freshmen residing on campus must select either the Block 105 or Block 75 meal plan.

TABLE 17 MEAL PLANS

*All freshmen living in campus housing may only select either Block 150 or Block 75.*

Meal plan	Block meals	Munch Money	Price per semester	Available to
Block 105	105	\$1,350	\$2,160	All
Block 75	75	\$1,550	\$2,160	All
Blue plan	0	\$1,995	\$1,895	All
Gold plan	0	\$995	\$945	Wickersham/Cutler only
Block 30	30	\$300	\$570	Commuter students only

### USING YOUR MEAL PLAN

Meals and Munch Money are accessed using the PolarExpress student ID card. With all meal plans, you have the option to eat at any campus dining location or to make purchases at most campus vending machines.

All students living in a residence hall are required to purchase a meal plan, with the exception of graduate students and residents living in Cutler Apartment Complex and the Sustainable Village. UAF also offers meal plans to students not living on campus. Students wishing to share meals with others may use Munch Money. For more information on meal plan options and plan details, please review the Dining Services program terms and conditions at [www.uaf.edu/dining/](http://www.uaf.edu/dining/).

All pricing is per semester. Students will automatically be enrolled in the same meal plan in the spring semester unless Dining Services is notified in writing of a different selection. These plans are nontransferable. All remaining block meals will expire on the final day of each semester. Leftover Munch Money from the fall semester will be added to the spring meal plan, but expires at the end of the academic year in May if not used. Unused meals and Munch Money will not be refunded.

Dining services on campus are provided by UAF partner Chartwells Higher Education Dining Services, an international food and facilities management services company. Check Dining Services' website at [www.uaf.edu/dining/](http://www.uaf.edu/dining/) for additions or changes.

## Where to Get More Information

### Dining Services

University of Alaska Fairbanks  
110 Eielson Building  
P.O. Box 757815  
Fairbanks, AK 99775-7815  
Email: [uaf-dining@alaska.edu](mailto:uaf-dining@alaska.edu)  
Online: [www.uaf.edu/dining/](http://www.uaf.edu/dining/)  
Telephone: 907-474-6661  
Fax: 907-474-5707



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Business major Shelby Carlson paddles across Ballaine Lake.

# 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 study plan to make the best use of your credits. Students can also see their degree and major requirements through DegreeWorks, UAF's graduation positioning system, 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/](http://www.uaf.edu/advising/) for academic advisor contact information.

The Academic Advising Center in the Gruening Building helps general studies and pre-major students as well as students in majors who are exploring other bachelor's or pre-professional degree programs. Certificate, associate, vocational and technical program students are advised at the Community and Technical College Student Advising and Registration 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 at community campuses outside 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 (undeclared and exploratory), pre-major, AHEAD students, student-athletes, nondegree students and students in transition from a declared major to another degree program. The center is also 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 variety of special topics, including study skills, deciding on a major and overcoming math anxiety. Staff provide academic support with reference materials, referrals, and study assistance to build and refresh knowledge in writing, math, reading and science. 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 510 Gruening Building, 907-474-6396, toll free at 888-823-8780 or by email at [uaf.advising@alaska.edu](mailto:uaf.advising@alaska.edu). Specific information for students, including degree program worksheets, can be found at [www.uaf.edu/advising/](http://www.uaf.edu/advising/).

### COMMUNITY AND TECHNICAL COLLEGE STUDENT ADVISING AND REGISTRATION CENTER

The Community and Technical College Student Advising and Registration 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 recognize the unique concerns of adult and returning students as well as traditional students entering college. Academic advisors can help with pre-admission advising, academic assessment and placement, financial aid information and applications, and 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, advising staff provide personalized career advice based on job market information and a student's personal goals. Staff ensure that students have a broad base of support as they plan the move from college to career.

For more information, contact the Student Advising and Registration Center, Community and Technical College, 604 Barnette St., Fairbanks, AK 99701, call 907-455-2800 or visit [www.ctc.uaf.edu/student/](http://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.

For more information contact Rural Student Services, Brooks Building main floor, call 907-474-7871 or 888-478-1452, email [uaf-rss@alaska.edu](mailto:uaf-rss@alaska.edu) or visit [www.uaf.edu/ruralss/](http://www.uaf.edu/ruralss/).

## INTERNATIONAL STUDENT ADVISING

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 are a liaison between the student and various U.S. immigration agencies. Advisors issue documents enabling students to apply for visas, help students adjust to UAF, and provide immigration and personal assistance. For more information, contact the Office of International Programs and Initiatives at 907-474-7677 or 907-474-7157, [uaf-internationalprograms@alaska.edu](mailto:uaf-internationalprograms@alaska.edu) or [www.uaf.edu/oip/](http://www.uaf.edu/oip/).

## STUDENT SUPPORT SERVICES

The Student Support Services program provides students with opportunities for academic development, assists with college requirements, and motivates students to complete 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 math 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 free to eligible students. The program is staffed with certified student tutors.

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, be enrolled in at least 6 credit hours and intend to obtain a bachelor's degree.

For information, contact Student Support Services in 514 Gruening Building, at 907-474-6844 or [trio.sss@alaska.edu](mailto:trio.sss@alaska.edu), or visit [www.uaf.edu/sss/](http://www.uaf.edu/sss/) for an application.

## TUTORING SERVICES

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

- **Accounting Lab**

The Accounting Lab provides tutoring services to students enrolled in accounting courses. Located in 219 Bunnell Building, the lab is staffed by accounting graduate students and outstanding undergraduate students. Lab hours are assigned (but flexible) Monday through Saturday. For more information, contact the Department of Accounting and Information Systems at 907-474-1945.

- **Chemistry Learning Center**

For more information contact the Department of Chemistry and Biochemistry at 907-474-6287 or [www.uaf.edu/chem/clc/](http://www.uaf.edu/chem/clc/).

- **Developmental Education Math, English and Reading Labs**

The Department of Developmental Education provides academic support labs in math, English and reading. These labs are at each of the rural campuses and the Community and Technical College, and on the Fairbanks campus. Labs provide tutoring and small group instruction for students taking developmental, academic or vocational math, and 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, in 609 Gruening, provides assistance in French, Spanish, Japanese, German and Russian. 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 seven days a week 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 907-474-5427.

- **Speaking Center**

The Speaking Center in 507 Gruening provides coaching on refining presentation topics and presentation organization. Students receive immediate, constructive suggestions from a Speaking Center coach. The center is usually open weekdays and some evenings. Visit [www.uaf.edu/speak/](http://www.uaf.edu/speak/) for center hours. For more information, contact the Speaking Center at 907-474-5470 or [fyspeak@uaf.edu](mailto:fyspeak@uaf.edu).

- **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 [uaf.advising@alaska.edu](mailto:uaf.advising@alaska.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.

## Academic Records, Registration and Graduation

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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 offers training workshops for students and staff on a variety of topics, including DegreeWorks, UAOnline, faculty grading and registration. All services (e.g., 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/](http://www.uaf.edu/register/).

For more information, contact the Office of Admissions and the Registrar on the first floor of Signers' Hall, call 907-474-7500, email [registrar@uaf.edu](mailto:registrar@uaf.edu) or visit [www.uaf.edu/reg/](http://www.uaf.edu/reg/).

## Alumni Association

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The UAF Alumni Association is an network of graduates and former students who support the university and advocate on its behalf. The association offers scholarships and sponsors various campus events and projects. The association's alumni mentor program helps students with degree program and career planning. Through the association, students have the opportunity for lifelong involvement with UAF and their former classmates. For more information contact the alumni association at 907-474-7081, [uaf-alumni@alaska.edu](mailto:uaf-alumni@alaska.edu) or [www.uaf.edu/alumni/](http://www.uaf.edu/alumni/).

## Army ROTC

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UAF is home to the only Army Reserve Officers Training Corps in Alaska. The military science program is staffed with regular Army and Alaska National Guard officers and non-commissioned officers. The 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.

ROTC offers a variety of resources, including scholarships, athletic teams and academic assistance. 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. For more information visit [www.uaf.edu/rotc/](http://www.uaf.edu/rotc/) or call 907-474-7501.

### FINANCIAL ASSISTANCE

Army ROTC provides financial assistance in the form of scholarships and stipends. The current stipend ranges between \$300-\$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. Scholarships are available for two to four 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, 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/](http://www.uaf.edu/rotc/).

### CURRICULUM

The military science curriculum is an approved minor which includes credit for one writing- and one oral-intensive course. Classes, including outdoor skills labs, are offered every semester. Labs give students hands-on instruction in areas such as rappelling, skiing, first aid, land navigation 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 contact the Department of Military Science at 907-474-6852/7501, [rotc@uaf.edu](mailto:rotc@uaf.edu) or [www.uaf.edu/rotc/](http://www.uaf.edu/rotc/).

## ASUAF

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The Associated Students of the University of Alaska Fairbanks is in Wood Center. 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 are selected by the student body in elections held every fall and spring semester. For information, visit ASUAF at [www.asuafstudentgov.org](http://www.asuafstudentgov.org) or call 907-474-7355.

## Athletics

The National Collegiate Athletics Association is the primary association that governs and controls intercollegiate athletics on the national level. The Alaska Nanook athletic program is a multidivisional 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, men's and women's Nordic skiing, co-ed rifle, women's volleyball, women's swimming, and men's ice hockey. For intercollegiate athletics information, call 907-474-6665 or visit [www.alaskananooks.com](http://www.alaskananooks.com).

The Alaska Nanooks have conference affiliations with the Great Northwest Athletic Conference, Western Collegiate Hockey Association, Central Collegiate Ski Association, and Pacific Collegiate Swim and Dive Conference. The 10-time NCAA champion Alaska Nanook rifle team competes in the Patriot Rifle Conference.

The Ernest N. Patty Center, completed in 1963, houses a 1,650-seat gymnasium, a 25-yard swimming pool, courts for handball, squash and racquetball, a varsity weight room, a rifle range, a classroom, offices, and locker rooms with saunas. The Patty Center is home to the university's Alaska Nanook teams as well as the university's Army ROTC program. In 1979, the 1,300-seat Patty Ice Arena was built to the west of the Patty Center. The Alaska 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

Recreational opportunities are organized by the Department of Recreation, Adventure and Wellness. Activities are housed primarily 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/draw/](http://www.uaf.edu/draw/).

The SRC offers a wide variety of structured and unstructured recreational activities. The SRC provides a weight room and a large gym floor that can be divided into courts for volleyball, tennis, badminton, soccer and basketball. A two-story indoor climbing wall, an eight-lap-per-mile running track, aerobics/dance floor and cardiovascular machines provide many options for a well-rounded workout. Eligible students have access to SRC facilities when your fees are paid — just remember to bring your workout shoes as street shoes are not allowed on the courts or floors.

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. DRAW staff members develop and support sports clubs in response to student interests and available resources.

Outdoor fields for soccer and Ultimate Frisbee, an outdoor climbing wall — which in winter is converted to an ice climbing wall — and a disc golf course 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, also next to the SRC. The Hulbert Nanook Terrain Park is near the sledding hill. Students with an SRC membership can ski or ride for free. The park maintains about 15 elements, including jumps and rails.

Explore Alaska's wild frontier by joining an Outdoor Adventures excursion. OA organizes a variety of outings, such as hikes, whitewater raft trips and rock climbing excursions. OA also offers courses such as ice climbing, sea kayaking and wilderness leadership, and rents equipment, including backpacks, canoes, cross-country skis and much more. Visit the Outdoor Adventures office in Wood Center or at [www.uaf.edu/draw/](http://www.uaf.edu/draw/) for more information.

Students with disabilities are encouraged to participate in campus recreation programs. Anyone confronted with any barrier to participation is urged to contact the SRC office.

## Career Services

Career Services provides career counseling and job search assistance, and also reviews statements for graduate school applications. The Career Services coordinator reviews resumes and cover letters and conducts practice interviews during office visits or through the online resource on the Career Services website. Information about employment, internships and on-campus jobs is available 8 a.m.–5 p.m., Monday–Friday year-round.

Students and alumni can network with employers and explore careers by participating 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 on the first floor of the Eielson Building. For more information call 907-474-7596, email [uaf-career@alaska.edu](mailto:uaf-career@alaska.edu) or visit [www.uaf.edu/career/](http://www.uaf.edu/career/).

## Continuing Education and Professional Development

The Community and Technical College offers training and continuing education programs to meet employment needs in the trades and professions. In response to individual and community demands, CTC provides short courses, noncredit workshops, supervisory and customer service skill seminars for local businesses and agencies, and general programs for cultural enrichment. Programs can be tailored to a specific group or need, and offer an economical way to improve workforce development skills. Call 907-455-2858 for more information about professional development.

## Cooperative Extension Service

The 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 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 90,000 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/](http://www.uaf.edu/ces/).

For more information, call 907-474-5211 or 877-520-5211 toll free, or visit [www.uaf.edu/ces/](http://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 to 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 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/](http://www.uaf.edu/deved/).

## Disability Services

The Disability Services program, in 208 Whitaker, provides services to students with documented disabilities on the Fairbanks campus as well as the Bristol Bay, Chukchi, Interior Alaska, 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 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](mailto:uaf-disability-services@alaska.edu) or at [www.uaf.edu/disability/](http://www.uaf.edu/disability/).

## Diversity and Equal Opportunity

Staff in the Diversity and Equal Opportunity office lead a focused effort to build inclusive systems and a welcoming environment at UAF. Staff provide conflict resolution and mediation services, ensure equality of employment and educational opportunity, and work to eradicate discriminatory practices.

DEO staff investigate complaints of discrimination and sexual harassment and work with parties to find resolution. If students or employees believe they are being treated differently because of their race, color, national origin, gender, religion, disability, age (over 40), genetic code, sexual orientation or retaliation, they can lodge a complaint with DEO. Complaints can be filed online at [www.uaf.edu/oeo/complaints/](http://www.uaf.edu/oeo/complaints/) or by visiting the office.

DEO is in the Nordic House at 739 Columbia Circle. For more information call 474-7300 or visit [www.uaf.edu/oeo/](http://www.uaf.edu/oeo/).

## E-learning

UAF's eLearning & Distance Education offers an alternative for anyone preferring an online educational option. The advantage of e-learning, also known as online learning, is its flexibility. Students select their own hours of study and work in surroundings they choose. E-learning offers the freedom to structure a personal academic schedule and continue educational progress, even when it is impossible or challenging to attend scheduled, face-to-face classes.

UAF eLearning & Distance Education offers more than 350 courses in 60 disciplines and offers degrees and certificates completely online. eLearning courses follow all university calendars and deadlines and must be completed within the semester time frame. These courses use the Blackboard

Learning Management System. You are required to have reliable Internet access to complete eLearning courses.

For UAF students, eLearning courses count as residence credit. When a student enrolls in an eLearning course, 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.

Information on course offerings, online certificates and degrees, enrollment information, withdrawal deadlines, fees, materials and course descriptions can be found at <http://elearning.uaf.edu>. For more information contact UAF eLearning & Distance Education in the Bunnell Building on the Fairbanks campus, by phone at 800-277-8060 or 907-479-3444, fax 907-479-3443, via email at [uaf-elearning@alaska.edu](mailto:uaf-elearning@alaska.edu) or at <http://elearning.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>.

## 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 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 at [www.uaf.edu/reg/](http://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 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 907-474-2764.

### 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 bachelor's-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 bachelor's 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 vice provost 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 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, coed 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 Phi Epsilon and Alpha Phi Omega, visit [www.uaf.edu/studentorgs/](http://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:

- Chi Epsilon (civil engineering)
- 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)
- 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

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The UAF Honors Program provides opportunities for students to pursue excellence in academic and personal development. We foster critical and independent thinking and help students become informed, responsible and active citizens. Honors students have access to small classes, research opportunities, intensive advising and scholarships. Students are encouraged to participate in service, leadership, research, study abroad, internships and other opportunities that contribute to their personal growth.

### ELIGIBILITY

Undergraduate students who have demonstrated high academic achievement and are pursuing a baccalaureate degree are encouraged to apply to the Honors Program. Entering freshmen must have a cumulative high school GPA of 3.6 and a composite SAT score of 1820 or a composite ACT score of 27. Current UAF students and transfer students must have a combined cumulative GPA of 3.5 that includes at least 24 credits of college courses. The Honors Program accepts applications all year. The application form is at [www.uaf.edu/honors/](http://www.uaf.edu/honors/).

### PROGRAM FEATURES

Honors students complete a flexible schedule of courses that includes honors sections of the core curriculum courses, courses developed specifically for the honors program, and standard courses contracted for honors credit by students with individual professors. With approval by the director, students who study abroad may earn up to 12 honors credits for academic courses they take at their host universities. Undergraduate students who complete graduate courses may count those courses toward their honors course requirement. In all cases, courses will only count toward the honors distinction if the student earns a grade of B (3.0) or higher. Honors students must be enrolled full-time and are expected to complete a minimum of 6 honors credits each academic year.

The Honors Program offers students intensive advising with an opportunity to develop a personal plan for their UAF years that builds in extracurricular opportunities, research, leadership, service and more to meet the goals of each student.

The Honors House, located in the heart of campus, provides honors students a casual and comfortable home away from home. The house includes computer labs, a smart classroom, quiet study areas and a place for social gatherings.

### PROGRAM REQUIREMENTS

To graduate with a distinction from the Honors Program, students must fulfill GPA, capstone project and honors credit requirements.

### GPA REQUIREMENT

To graduate with a distinction from the Honors Program, in addition to the other program requirements, students must have a cumulative GPA of 3.25. Students whose cumulative GPA falls below 3.25 for two consecutive semesters will be removed from the program unless an appeal is approved by the honors director.

### CAPSTONE PROJECT REQUIREMENT

To graduate with a distinction from the Honors Program, in addition to the other program requirements, students must work with a faculty mentor to complete a capstone project, including a written component and an oral presentation.

### HONORS CREDIT REQUIREMENT

University Honors Scholar distinction is awarded at commencement to students who complete 27 or more credits of honors course work and/or study abroad and graduate-level courses in addition to the other program requirements. Honors Program Scholar distinction is awarded to students who complete 12 credits of honors course work in addition to other program requirements.

### ADDITIONAL INFORMATION

For more information contact the Honors Program at the Honors House, 520 Copper Lane, 907-474-6612, [uaf.honors@alaska.edu](mailto:uaf.honors@alaska.edu) or [www.uaf.edu/honors/](http://www.uaf.edu/honors/).

## Libraries

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UAF has two libraries on the Fairbanks campus and libraries on four rural campuses. Elmer E. Rasmuson Library, on the Fairbanks campus, is the largest academic library in the state, with more than a million volumes. The Keith B. Mather Library, also on the Fairbanks campus, holds collections in the geological and biological sciences and Alaska's U.S. Patent and Trademark Office depository. Both libraries offer wireless and wired networking, public computer terminals, and designated quiet study spaces with natural lighting. Rasmuson Library also has group study rooms and a secure 23-hour study space with a student computer lab.

Rasmuson and Mather libraries provide extensive reference and instructional services for students. Library faculty and staff help students conduct library research using print materials and online databases and collections. The library information and research course, LS F101X, is part of the core curriculum and gives students an introduction to effective methods of identifying, locating and evaluating information resources.

Online catalogs and databases provide access to library resources at UAF libraries and, through interlibrary loan, worldwide. The library website is a gateway to more than 300 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 60,000 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. ScholarWorks, the University of Alaska online institutional repository, makes theses, dissertations, articles and other scholarly works by UA students and faculty available to the public.

Rasmuson Library is a federal documents depository and receives about one-third of the titles available for selection from the U.S. Government Printing Office. Special collections

in the library include the internationally recognized Alaska and Polar Regions Collections and Archives, which houses historical books, periodicals, documents, manuscripts, photographs, film, oral histories and maps. APRCA hosts Alaska's digital archives and continues to digitize archival materials to make more specialized materials available to the public.

Get more Rasmuson Library information at 907-474-7481, AskRasmusonLibrary@uaf.libanswers.com or <http://library.uaf.edu>.

## New Student Orientation

New Student Orientation helps incoming students establish a foundation for success. All new students are strongly encouraged to participate in New Student Orientation on the Fairbanks campus. Orientation is required for all first-year bachelor's-degree students (regardless of the number of earned college credits) and international students (undergraduate F-1 and international exchange J-1 status). Domestic transfer students are also encouraged to attend.

New Student Orientation features a variety of workshops and activities to address the needs of incoming students, including campus tours, opportunities to meet faculty and staff, numerous campus resource presentations, and many fun social events. Fall semester includes the popular family orientation for parents and other family members of new students. Fees are \$115 per student for fall orientation, which covers all programs except special Outdoor Adventures activities; \$10 for one-day fall transfer student orientation; \$25 (plus \$10 each additional guest) for two-day fall family orientation; and \$35 for spring orientation. For more information, contact the New Student Orientation office at 907-474-1103 or visit [www.uaf.edu/orientation/](http://www.uaf.edu/orientation/).

## Northern Military Programs

Northern Military Programs is Interior Alaska's point of contact for University of Alaska programs. UAF has been designated a Military Friendly Institution since 2008, and UAF CTC maintains offices on Fort Wainwright and Eielson Air Force Base to serve military personnel and their families. CTC offers university classes at Fort Wainwright, Eielson Air Force Base, North Pole High School and via distance education. In addition, NMP offers courses to the Delta community at Fort Greely and the Career Advancement Center in Delta Junction.

CTC actively supports the Wounded Warrior Transition Unit with academic advising and future career preparation. CTC offers Accuplacer (English), ALEKS (math) and CLEP/DANTES placement testing on post.

For information contact Northern Military Programs offices at Eielson Air Force Base, 2623 Wabash Ave., Room 105, 907-377-1396; Fort Wainwright, 4391 Neely St., Room 137, 907-356-3826; or Delta Career Advancement Center, 1696 N. Clearwater Ave., 907-895-4605.

## PolarExpress Identification Card

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

Your PolarExpress card lets you check out library books, vote in student elections, and 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 can be used at all Dining Services locations, vending machines, photocopiers, the Wood Center counter and the Bookstore. See the complete list at [www.uafbearbucks.com](http://www.uafbearbucks.com).

For PolarExpress card information, call 907-474-7384 or visit [www.uaf.edu/finserv/bursar/polarexpress/](http://www.uaf.edu/finserv/bursar/polarexpress/).

You can access your account balance and add money to your PolarExpress card through eAccounts, a secure way to check all your stored value accounts (Bearbucks, Munch Money, copy card, etc.), add money to your card, view your transaction history, deactivate a lost or stolen card, and more. Visit <https://eacct-ualaska-sp.blackboard.com/eaccountsuaf/AnonymousHome.aspx>.

## 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 people and property on the Fairbanks 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 serves the Fairbanks campus 24 hours a day. In addition to handling campus law enforcement calls, the center also receives emergency calls from communities along the Parks Highway from Fairbanks to Cantwell. The center employs full-time career dispatchers.

The University Fire Department provides fire, rescue, EMS response, public assistance and hazardous materials response to the Fairbanks 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 Fairbanks-area and rural 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 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/](http://www.uaf.edu/police/) or [www.uaf.edu/fire/](http://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/\$90 per year per box is collected by the post office. When leaving UAF permanently, 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 [campus.postoffice@uaf.edu](mailto:campus.postoffice@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 preventive care, illness and injury are provided at no charge. Medications, laboratory services, medical supplies and some physical examinations 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 should call to schedule appointments. Students in emergency situations are usually seen the same day. The counseling staff also provide specialized evaluation and referral for alcohol and other drug problems at no charge when requested on a voluntary basis.

Professional staff provide information, health education and referral for individuals and groups seeking to maintain or improve 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 help with information about how to file claims.

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

## Student Services

University and Student Advancement provides student-centered programs and services to help students achieve their personal, academic and career goals. In collaboration with the academic deans, USA leads the university in recruiting a diverse student body. With the creative use of ongoing assessment, USA supports and develops programs and communities that contribute to the retention, success and leadership development of students.

University and Student Advancement departments include the Office of Admissions and the Registrar; Associated Students of UAF; the Athletics Department; the Bookstore; Career Services; the Office of the Dean of Students; the Department of Recreation, Adventure and Wellness; the Office of Development and Alumni Relations; Dining Services; Disability Services; Financial Aid; International Programs and Initiatives; KUAC; Marketing and Communications; Orientation; Residence Life; Student Health and Counseling Center; Student Leadership Development; Sustainability; Veterans Resource Center; Women's Center; and Wood Center.

The Office of the Vice Chancellor for University and Student Advancement is a resource and referral center where any student who does not know where to look for a solution to a problem at UAF will find help. Each department and office has its own web page detailing its student services, or students can visit [www.uaf.edu/usa/](http://www.uaf.edu/usa/) for a complete list of all departments. For more information contact University and Student Advancement at [uaf-vcusa@alaska.edu](mailto:uaf-vcusa@alaska.edu) or 907-474-2600.

The Dean of Students office is also a resource and referral center where students can get help with concerns, issues or needs. You can get more information at [www.uaf.edu/deanofstudents/](http://www.uaf.edu/deanofstudents/), [uaf-deanofstudents@alaska.edu](mailto:uaf-deanofstudents@alaska.edu) or 907-474-7317.

## Study Away 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 almost 200 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 to 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 students with a 2.5 cumulative GPA. Tuition is assessed by the host institution at the in-state rate, or the student may pay tuition at UAF. The application deadline is Feb. 15 before the term of exchange. For more information, visit [www.nse.org](http://www.nse.org) and contact the NSE coordinator in the Office of International Programs and Initiatives at 907-474-7192 or [uaf-studyaway@alaska.edu](mailto:uaf-studyaway@alaska.edu), or visit <http://studyabroad.uaf.edu>.

*Note: Students attending any campus of the University of Alaska system under the National Student Exchange program are assumed to be receiving the benefit of reduced tuition because of their enrollment at an 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 Nonresident Tuition policy on page 52.*

## 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 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 \$300 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 \$300 processing fee. Tuition and fees are assessed on a semester basis.

UARctic organizes north2north, one of UAF's student exchange programs. 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 International Programs and Initiatives for more information at 907-474-7192 or [uaf-studyaway@alaska.edu](mailto:uaf-studyaway@alaska.edu), or visit <http://studyabroad.uaf.edu>.

## Summer Sessions and Lifelong Learning

Summer Sessions and Lifelong Learning provides a variety of academic opportunities. Courses are open to undergraduate and graduate students seeking degrees and to professionals renewing their licenses, as well as 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. This is followed by a 12-week session that runs concurrently with two six-week sessions.

In the fall and spring, SLL offers courses in the Weekend College. In early January, WINTERmester offers credit and noncredit classes in a two-week intensive session, giving students the opportunity to earn up to 3 credits before spring semester begins. Professional and continuing education courses are offered throughout the year.

In addition to standard collegiate academic programs, weekend focus and special interest classes, for credit and noncredit, are offered to community members and college students. Campus activities for youth include summer day camps for school-age children, business and leadership training, and the Visual Arts Academy. Summer Sessions also houses the Osher Lifelong Learning Institute, which offers opportunities for continued learning for adults 50 and older.

Each summer SLL hosts free lectures, movies, concerts and recreational activities for students and community members. In January, a community lecture is associated with WINTERmester.

SLL educational travel programs take groups overseas several times each year to study the cultural, political and natural history of destination countries.

For more information, contact Summer Sessions and Lifelong Learning, 216 Eielson Building, phone or text 907-474-7021, toll free at 866-404-7021, email [summer@uaf.edu](mailto:summer@uaf.edu), or visit [www.uaf.edu/summer/](http://www.uaf.edu/summer/).

## Technology on Campus

The Office of Information Technology is centrally located in the Bunnell Building on the Fairbanks campus to provide the highest quality of service relating to technology needs for UAF students, faculty and staff. The OIT Service Desk, with two walk-up locations at 231 Bunnell and 102 Butrovich, is your computing help desk and a gateway to many of the services OIT offers.

### INTERNET ACCESS, COMPUTING LABS AND SMART CLASSROOMS

Wireless Internet is available in most public areas and in all buildings on the Fairbanks campus. The residence halls also have the ability to connect via wired access.

OIT operates and maintains two student computer labs in 404 Rasmuson and 110 Moore-Bartlett-Skarland. The newest addition in computing labs is the Nook, in Bunnell 319. The Nook is a collaborative commons space that offers various seating options with accessible power outlets, virtual

computer stations, wired and wireless network access for student devices, mobile printing, and conference tables where students can share content on their devices with others on a large screen.

On the Fairbanks campus there are 75 smart rooms (classrooms, auditoriums and lab spaces), furnished with instructional technologies such as in-room computers, digital projectors, DVD playback devices, document cameras and digital monitors. Six of these smart classrooms are equipped to provide automated lecture capture/recording.

### **ADDITIONAL OIT SERVICES IN BUNNELL**

The Student Computer Repair Center provides free help and advice for students having issues with their personal computers.

OIT Video Conferencing Services provides consultation, planning, installation, training and scheduling for video-conferencing classrooms and other video-enabled rooms on the Fairbanks campus and across the University of Alaska system. VCS can also schedule and support job interviews for students, faculty and staff. Contact VCS at [www.alaska.edu/oit/services/video-conferencing/](http://www.alaska.edu/oit/services/video-conferencing/) or contact the OIT Service Desk.

Contact the OIT Service Desk at 907-450-8300, toll free at 800-478-8226, email [helpdesk@alaska.edu](mailto:helpdesk@alaska.edu) or visit [www.alaska.edu/oit/get-help/](http://www.alaska.edu/oit/get-help/).

## **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. The office also does private proctoring. For more information and registration materials, visit Testing Services in 211 Gruening Building, call 907-474-5277, email [uaf-testing-dept@alaska.edu](mailto:uaf-testing-dept@alaska.edu) or visit [www.uaf.edu/testing/](http://www.uaf.edu/testing/).

## **Undergraduate Research and Scholarly Activity**

As a research university, UAF offers students opportunities to participate in experimental and observational research and creative scholarship. The Office of Undergraduate Research and Scholarly Activity supports, develops, documents and institutionalizes UAF's diverse and robust programs of undergraduate research and scholarly activity. Building on existing efforts and capacities, URSA enables UAF students to pursue varying levels of research engagement from a single credit of a first-year seminar to independent scholarly investigations, a B.F.A. exhibit or performance, or a senior thesis.

### **ELIGIBILITY**

Undergraduate students from all disciplines are eligible to engage in research or creative scholarly activity for academic credit or for pay. All UAF students are eligible to enroll in URSA courses and apply for URSA awards that support their research or creative projects with funding for travel, supplies and stipends. First-year students and new transfer students are encouraged to attend the UAF Research Showcase to learn about research and creative opportunities across all disciplines at UAF. Students can use URSA as a resource to help find a faculty mentor with whom they might work on a research or creative project. The project may be designed by the student or the faculty mentor and will lead to creation of knowledge.

For more information contact the URSA office at 301 Bunnell Building, 907-450-8772 or [ursa.uaf@alaska.edu](mailto:ursa.uaf@alaska.edu), or visit [www.uaf.edu/ursa/](http://www.uaf.edu/ursa/).

## **Upward Bound**

The goal of the Upward Bound College Bound program is improving the graduation rates of high school students and increasing the number of UB College Bound graduates who enter colleges and universities. UB College Bound offers two strands: a school year program that works with 10 high schools in Alaska, called "target schools," along with three distinct six-week summer residential programs held on the UAF campus: UB College Bound (freshman/sophomore), Pre-College Academy (juniors), and the Pathways-2-College bridging program (graduating seniors).

Upward Bound College Bound serves 160 low-income, first-generation college students who demonstrate potential for academic success and whose parents have not earned college degrees. Services offered in 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 Fairbanks campus.

The residential summer program emphasizes academic development for 50 students selected for participation from the target schools. The summer experience helps UB students become familiar with the Fairbanks campus, residence life, services provided and, most importantly, places an emphasis on academic development and growth.

Participation in this program is only available to active UB College Bound target school participants. Upward Bound College Bound is a federally funded program.

For more information, call 907-474-5685 or email [ub.classic@alaska.edu](mailto:ub.classic@alaska.edu).

## Women's Center

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The mission of the UAF Women's Center is to advocate for, provide resources to, commemorate the achievements of and empower women, LGBT persons, and their allies at UAF and beyond.

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, physical and mental ability. In accordance with UAF's mission statement and strategic plan, the Women's Center is charged with educating the university and the community about gender-related issues and providing space and an environment to support women in their cultural, spiritual, social and intellectual lives. The Women's Center is open to all.

For more information contact the Women's Center at 907-474-6311 or [uaf-woc@alaska.edu](mailto:uaf-woc@alaska.edu), or visit [www.uaf.edu/uafwomen/](http://www.uaf.edu/uafwomen/).

## Wood Center

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

Services 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 ATM, and tickets to cultural and sporting events.

Wood Center is home to the Concert Board and the Student Activities Office, which oversees 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, Winter Carnival in February and SpringFest in late April. For more information visit [www.uaf.edu/activity/](http://www.uaf.edu/activity/).

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/](http://www.uaf.edu/leadership/).

More than 140 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 older with live music, an open mic night, movies, trivia games and karaoke. Special events include theme nights, beer and wine tastings, comedy performances, casino night and more.

For more information call 907-474-7037 or visit [www.uaf.edu/woodcenter/](http://www.uaf.edu/woodcenter/).



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Students in a class on solar photovoltaic design and installation prepare to mount solar panels along the road next to the Cold Climate Housing Research Center near the Fairbanks campus. The class is offered through UAF's Community and Technical College.

# 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 85.

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 9-24 credit hours and will be posted to the student's transcript upon completion and after 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 credits at the 100 level or above for an occupational endorsement. At least 30 percent of the program must be earned at UAF. A minimum of a 2.0 cumulative GPA is required in all work as well as in your major field. In addition, you must earn a minimum C- grade in courses required for your occupational endorsement. Some programs may require higher GPAs for major course work.

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.

# Occupational Endorsement Programs

## ADMINISTRATIVE ASSISTANT

College of Rural and Community Development  
Community and Technical College  
907-455-2815  
[www.ctc.uaf.edu/programs/aaa/](http://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- 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). Applicants must be 16 years old to be admitted.

### Occupational Endorsement Program

1. Complete the following admissions requirement: Be at least 16 years old by the first day of the semester in which you are admitted.
  2. Complete the general university requirements (page 84).
  3. Complete the occupational endorsement requirements (page 84).
  4. Complete the following:\*
    - 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
  5. Complete 6 credits from the following:\*
    - ABUS F183—Advanced Job Readiness Skills.....2
    - ABUS F199—Practicum in Applied Business.....1
    - CIOS F130—Microcomputer Word Processing.....3
    - CIOS F135—Microcomputer Spreadsheets.....3
    - CIOS F150—Computer Business Applications.....3
  6. Minimum credits required ..... 16
- \* Students must earn a C- grade or better in each course.

## BOOKKEEPING TECHNICIAN

College of Rural and Community Development  
Community and Technical College  
907-455-2800  
[www.ctc.uaf.edu/programs/abus/](http://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. Applicants must be 16 years old to be admitted.

### Occupational Endorsement Program

1. Complete the following admissions requirement: Be at least 16 years old by the first day of the semester in which you are admitted.
  2. Complete the general university requirements (page 84).
  3. Complete the occupational endorsement requirements (page 84).
  4. Complete the following:\*
    - ABUS F101—Principles of Accounting I.....3
    - ABUS F141—Payroll Accounting.....3
    - ABUS F201—Principles of Accounting II.....3
    - ABUS F203—Accounting Capstone .....3
    - ABUS F220—QuickBooks Accounting .....3
  5. Minimum credits required ..... 15
- \* Students must earn a C- grade or better in each course.

## CARPENTRY, BASIC

College of Rural Community Development  
907-474-5439 or 888-474-5207  
[www.uaf.edu/rural/](http://www.uaf.edu/rural/)

### Occupational Endorsement

Minimum Requirements for Occupational Endorsement: 14.5 credits

The occupational endorsement in basic carpentry is the beginning for both a career in the construction industry and pursuing a certificate and degree in construction trades technology. Training will consist of basic construction safety, introduction to hand and power tools, construction mathematics, floor systems, roof framing, and window and exterior door installation. Students will develop a basic understanding of how to communicate, understand, anticipate and complete the work on a construction job site. Applicants must be 16 years old to be admitted.

### Occupational Endorsement Program

1. Complete the following admissions requirement: Be at least 16 years old by the first day of the semester in which you are admitted.
2. Complete the general university requirements (page 84).
3. Complete the occupational endorsement requirements (page 84).
4. Complete the following:
  - 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) .....3
  - CTT F106 Construction Mathematics .....3
  - CTT F110 Residential Carpentry – Level I (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
5. Minimum credits required ..... 14.5

## FACILITY MAINTENANCE

College of Rural and Community Development  
 Interior Alaska Campus  
 907-474-2613  
[www.uaf.edu/rural/](http://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 Alaska 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. Applicants must be 16 years old to be admitted.

#### Occupational Endorsement Program

1. Complete the following admissions requirement: Be at least 16 years old by the first day of the semester in which you are admitted.
  2. Complete the general university requirements (page 84).
  3. Complete the occupational endorsement requirements (page 84).
  4. 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
  5. Minimum credits required ..... 12
- \* Students must earn a C- grade or better in each course.

## FINANCIAL SERVICES REPRESENTATIVE

College of Rural and Community Development  
 Bristol Bay Campus 907-842-5109  
 Chukchi Campus 907-442-3400  
 Interior Alaska 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/](http://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 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. To be hired in any financial institution, graduates must be able to pass credit and criminal background checks. Applicants must be 16 years old to be admitted.

## Occupational Endorsement Program

1. Complete the following admissions requirement: Be at least 16 years old by the first day of the semester in which you are admitted.
  2. Complete the general university requirements (page 84).
  3. Complete the occupational endorsement requirements (page 84).
  4. Complete the following\*:
    - ABUS F233—Financial Management..... 3
    - ABUS F155—Business Math (3) ..... 3
    - or MATH F100-level or above (3) ..... 3
    - ABUS F154—Human Relations (3) ..... 3
    - or ABUS F175—Customer Service (3)..... 3
  5. Complete 6 credits from the following:
    - ABUS F160—Principles of Banking ..... 3
    - ABUS F161—Personal and Business Finance ..... 3
    - ABUS F234—Introduction to Investing ..... 3
  6. Minimum credits required ..... 15
- \* Students must earn a C- grade or better in each course.

## HEALTH, ALLIED

College of Rural and Community Development  
 Community and Technical College  
 907-455-2887  
[www.ctc.uaf.edu/programs/health/](http://www.ctc.uaf.edu/programs/health/)

### Occupational Endorsement

Minimum Requirements for Endorsement: 9-13 credits

The occupational endorsements in allied health give students 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 who 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](mailto:fyhealth@uaf.edu); or at [www.ctc.uaf.edu/health/](http://www.ctc.uaf.edu/health/).

### Medical Billing — Occupational Endorsement Program

1. Complete the following admissions requirement: Be at least 16 years old by the first day of the semester in which you are admitted.
  2. Complete the general university requirements (page 84).
  3. Complete the occupational endorsement requirements (page 84).
  4. 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
  5. Minimum credits required .....12
- \* Students must earn a C- or better in each course.

### Medical Coding — Occupational Endorsement Program

1. Complete the following admissions requirement: Be at least 16 years old by the first day of the semester in which you are admitted.
  2. Complete the general university requirements (page 84).
  3. Complete the occupational endorsement requirements (page 84).
  4. 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
  5. Minimum credits required .....13
- \* Students must earn a C- or better in each course.  
\*\* Must complete HLTH F235 with a B grade or better.

### Medical Office Reception — Occupational Endorsement Program

1. Complete the following admissions requirement: Be at least 16 years old by the first day of the semester in which you are admitted.
  2. Complete the general university requirements (page 84).
  3. Complete the occupational endorsement requirements (page 84).
  4. 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
  5. Minimum credits required .....12
- \* Students must earn a C- or better in each course.

### Nurse Aide — Occupational Endorsement Program

1. Complete the following admissions requirement: Be at least 18 years old by the first day of the semester in which you are admitted.
2. Complete the general university requirements (page 84).
3. Complete the occupational endorsement requirements (page 84).
4. Complete the following:
  - 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
5. Minimum credits required .....9

## HOMELAND SECURITY

School of Management  
907-474-7461

### Occupational Endorsement

Minimum Requirements for Occupational Endorsement: 12 credits

The occupational endorsement in homeland security provides the basic academic preparation and sought after critical thinking skills necessary for mid-level careers in the TSA agency or homeland security field while also serving as a stepping-stone into a homeland security and emergency management-related degree programs such as the HSEM bachelor's degree at SOM. Applicants must be 18 years old to be admitted.

### Occupational Endorsement Program

1. Complete the following admissions requirement: Be at least 18 years old by the first day of the semester in which you are admitted.
2. Complete the general university requirements (page 84).
3. Complete the occupational endorsement requirements (page 84).
4. Complete the following:
  - HSEM F120—Introduction to Emergency Management (3)  
or HSEM F121—Introduction to Homeland Security .....3
5. Complete at least 9 credits from the following electives:
  - HSEM F223—Terrorism: A Global Threat.....3
  - HSEM F225—Intelligence Analysis and Security Management .....3
  - HSEM F227—Transportation and Border Security.....3
  - HSEM F231—Threat of Weapons of Mass Destruction .....3
  - HSEM F233—Critical Infrastructure Protection.....3
6. Minimum credits required .....12

## LAW ENFORCEMENT ACADEMY

College of Rural and Community Development  
Community and Technical College  
907-455-2853  
[www.ctc.uaf.edu/programs/lawacad/](http://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. Applicants must be 21 years old to be admitted.

**Law Enforcement Certification by the Alaska Police Standards Council**

1. Complete the following admissions requirement: Be at least 21 years old by the first day of the semester in which you are admitted.
2. 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
3. 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/](http://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 nonemergency transport service. Paramedics also work in doctors’ offices, urgent care clinics, hospital emergency rooms, intensive care units, laboratories, aero-medical 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 respiratory therapy and in the emergency room, 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 at 907-455-2895 or [jjurong@alaska.edu](mailto:jjurong@alaska.edu). Applications will be reviewed by CTC’s Paramedic Academy Advisory Board. In keeping with certification requirements, class size is limited to 25 students. Completion of EMS F170—Emergency Medical Technician I (6 credits) is a pre-requisite for the paramedic academy. Completion of HLTH F114—Fundamentals of Anatomy and Physiology (4 credits) is recommended. Applicants must be 18 years old to be admitted.

**Academy Requirements**

1. Complete the following admissions requirement: Be at least 18 years old by the first day of the semester in which you are admitted.
2. 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
3. Minimum credits required ..... 44

**RURAL HUMAN SERVICES**

College of Rural and Community Development  
 Chukchi Campus 907-442-3400  
 Interior Alaska Campus 907-474-5440  
 Kuskokwim Campus 907-543-4500  
 Northwest Campus 907-443-2201  
[www.uaf.edu/rhs/](http://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. The endorsement 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 steppingstone 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. Applicants must be 18 years old to be admitted.

**Occupational Endorsement Program**

1. Complete the following admissions requirement: Be at least 18 years old by the first day of the semester in which you are admitted.
2. Complete the general university requirements (page 84).
3. Complete the occupational endorsement requirements (page 84).

4. 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 Recovery and Mental Illness..... 2
  - RHS F285—Case Management ..... 2

5. Minimum credits required ..... 16  
*Note: See your advisor if you are not sure which catalog year to use.*

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## RURAL UTILITIES BUSINESS MANAGEMENT

College of Rural and Community Development  
 Interior Alaska Campus  
 907-474-5439  
[www.uaf.edu/rural/](http://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 wastewater 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. Applicants must be 16 years old to be admitted.

### Occupational Endorsement Program

1. Complete the following admissions requirement: Be at least 16 years old by the first day of the semester in which you are admitted.
  2. Complete the general university requirements (page 84).
  3. Complete the occupational endorsement requirements (page 84).
  4. 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
  5. Minimum credits required ..... 12
- \* *Students must earn a C- or better in each course.*

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## RURAL WASTE MANAGEMENT AND SPILL RESPONSE

College of Rural and Community Development  
 Bristol Bay Campus  
 907-842-5109  
[www.uaf.edu/rural](http://www.uaf.edu/rural)

### Occupational Endorsement

Minimum Requirements for Occupational Endorsement: 10 credits

The occupational endorsement in rural waste management and spill response provides education and training in how to handle management municipal waste. Emphasis is placed upon providing students with the skills and experience necessary to implement solutions to challenging solid waste stream issues facing rural waste managers. The program introduces students to best practices in waste management that are in compliance with state and federal governmental regulations. Exceptional focus is placed on workplace safety and students are assessed on proficiency in operational safety and safety planning. Upon completion of the occupational endorsement, students will be prepared to help protect rural communities from many of the environmental risks associated with waste disposal by safely managing municipal solid and hazardous waste streams.

### Occupational Endorsement Program

1. Complete the following admissions requirement: Be at least 16 years old by the first day of the semester in which you are admitted.
2. Complete the general university requirements (page 84).
3. Complete the occupational endorsement requirements (page 84).
4. Complete the following:\*
  - ABUS F183—Job Readiness Skills..... 1
  - ENVI F110—Introduction to Water Quality I: Measurement..... 1
  - ENVI F115P—Solid and Hazardous Waste Management ..... 1
  - ENVI F116P—Rural Alaska Landfill Operator..... 1
  - ENVI F117P—Community Spill Response ..... 1
  - FIRE F110—Introduction to Hazardous Waste Operations and Emergency Response..... 3
5. Complete 2 credits from the following:
  - CIOS F135—Microcomputer Spreadsheets ..... 1-3
  - CTT F130—Introduction to Facilities Maintenance ..... 1
  - ENVI F130—Introduction to the National Environmental Policy Act..... 3
  - ENVI F160—Internship in Environmental Studies..... 1-2
  - ENVI F260—Field Methods for Environmental Technicians ..... 2
  - HLTH F122—First Aid and CPR..... 1
  - RD F250—Grant Writing for Community Development ..... 1-3
  - TM F130—Introduction to Utility Management..... 2
  - Advisor approved elective ..... 1-2
6. Minimum credits required ..... 10

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## SUSTAINABLE ENERGY

College of Rural and Community Development  
 907-842-5109 or 800-478-5109  
[www.uaf.edu/rural/](http://www.uaf.edu/rural/)

### Occupational Endorsement

Minimum Requirements for Occupational Endorsement: 12 credits

Providing education and training in energy efficiency and renewable energy, the sustainable energy occupational endorsement addresses many of the energy issues that influence Alaska communities and provides the basic academic preparation for entry-level sustainable

energy careers. It also serves as a steppingstone into science- and engineering-related certificate, associate or bachelor's programs.

The program is structured as 6 credits of foundation knowledge and a minimum of 6 credit electives that allow students (in consultation with their advisor) to specialize in specific areas of sustainable energy. Some examples of how the electives can be formed into specific areas of study follow. Applicants must be 16 years old to be admitted.

- **Energy Science**  
ENVI F101—Introduction to Environmental Science (3)  
PHYS F102X—Energy and Society (4)
- **Photovoltaic**  
CTT F100—Construction Technology Core (3)  
CTT F160—Photovoltaic Systems — Part I (5)  
CTT F161—Photovoltaic Systems — Part II (5)
- **Biomass**  
CTT F100—Construction Technology Core (3)  
ENVI F120—Home Energy Basics (1)  
CTT F250—Current Topics in Construction Trades: Biomass (2)
- **Wind**  
CTT F100—Construction Technology Core (3)  
ENVI F120—Home Energy Basics (1)  
CTT F250—Current Topics in Construction Trades: Turbine (2)
- **Energy-Efficient Construction**  
CTT F100—Construction Technology Core  
CT S201—Cold Climate Construction (3)\*\*
- Other areas of study related to sustainable energy

**Occupational Endorsement Program**

1. Complete the following admissions requirement: Be at least 16 years old by the first day of the semester in which you are admitted.
  2. Complete the general university requirements (page 84).
  3. Complete the occupational endorsement requirements (page 84).
  4. Complete the following:\*  
DEV M F105—Intermediate Algebra (3)  
or CTT F106—Construction Mathematics (3)  
or TTCH F131—Mathematics for the Trades (3) ..... 3  
ENVI F220—Introduction to Sustainable Energy ..... 3
  5. Complete at least 6 credits from the following electives:\*  
CT S201—Cold Climate Construction ..... 3\*\*  
CTT F100—Construction Technology Core ..... 3  
CTT F160—Photovoltaic Systems — Part I ..... 5  
CTT F161—Photovoltaic Systems — Part II ..... 5  
CTT F250—Current Topics in Construction Trades ..... 1-3  
ENVI F101—Introduction to Environmental Science ..... 3  
ENVI F120—Home Energy Basics ..... 1  
ENVI F121—Building Ventilation and Energy ..... 1  
ENVI F122—Energy Efficient Building Design and Simulation ..... 1  
PHYS F102X—Energy and Society ..... 4  
or other, advisor-approved electives
  6. Minimum credits required ..... 12
- \* Students must earn a C- or better in each course.  
\*\* CT S201 is offered by the University of Alaska Southeast.

**TRIBAL JUSTICE**

College of Rural and Community Development  
Interior Alaska Campus  
907-474-5710  
[www.uaf.edu/rural/](http://www.uaf.edu/rural/)

**Occupational Endorsement**

Minimum Requirements for Occupational Endorsement: 9 credits

The occupational endorsement in tribal justice provides education specific to tribal courts and tribal justice in Alaska, preparing tribal court judges, clerks and administrators for employment in the tribal justice field. The endorsement also provides a pathway for continuing education for tribal justice professionals in Alaska. Applicants must be 16 years old to be admitted.

**Occupational Endorsement Program**

1. Complete the following admissions requirement: Be at least 16 years old by the first day of the semester in which you are admitted.
2. Complete the general university requirements (page 84).
3. Complete the occupational endorsement requirements (page 84).
4. Complete the following:  
TM F110—Tribal Court Development for Alaska Tribes ..... 1  
TM F111—Children’s Topics in Tribal Justice ..... 1  
TM F112—Federal Indian Law for Alaska Tribes ..... 1  
TM F113—Tribal Code Development ..... 1  
TM F114—Tribal Justice Responses to Community and Domestic Violence ..... 1  
TM F115—Tribal Court Administration ..... 1  
TM F116—Juvenile Justice in Tribal Court ..... 1  
TM F117—Tribal Court Enforcement of Decisions ..... 1  
TM F118—Tribal Community and Restorative Justice ..... 1
5. Minimum credits required ..... 9

**WELDING, ENTRY-LEVEL**

College of Rural and Community Development  
Community and Technical College  
907-455-2932  
[www.ctc.uaf.edu/programs/weld/](http://www.ctc.uaf.edu/programs/weld/)

**Occupational Endorsement**

Minimum Requirements for Occupational Endorsement: 24 credits

The entry-level welding occupational endorsement provides training 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. Applicants must be 16 years old to be admitted.

**Occupational Endorsement Program**

1. Complete the following admissions requirement: Be at least 16 years old by the first day of the semester in which you are admitted.
2. Complete the general university requirements (page 84).
3. Complete the occupational endorsement requirements (page 84).

4. 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
    - WMT F150—Gas Tungsten Arc Welding.....3
  5. Minimum credits required .....24
- \* Students must earn a C or better in each course.

## WILDLAND FIRE SCIENCE

College of Rural and Community Development  
 Community and Technical College  
 907-455-2895  
[www.ctc.uaf.edu/programs/emergency/](http://www.ctc.uaf.edu/programs/emergency/)

### Occupational Endorsement

Minimum Requirements for Occupational Endorsement: 11 credits

The wildland fire science occupational endorsement provides students with the knowledge and skills to perform at the first level of wildland fire management. This includes managing a squad on a wildland fire crew, correct methods of operation for wildland fire chainsaws and pumps, and working around fire helicopters and aircraft. Completion of this program can lead to employment in the field, provide a foundation for wildland fire management, including in- and out-of-state wildland fire assignments, and act as a steppingstone to the Associate of Applied Science degree in wildland fire control. Completion of the wildland fire science occupational endorsement will create a well-rounded entry-level firefighter capable of filling positions on wildland fires. Applicants must be 18 years old to be admitted.

#### Occupational Endorsement Program

1. Complete the following admission requirement: Be at least 18 years old by the first day of the semester in which you are admitted.
2. Complete the general university requirements (page 84).
3. Complete the occupational endorsement requirements (page 84).
4. Complete the following:
  - FIRE F151—Wildland Firefighter I.....3
  - FIRE F152—Wildland Firefighter II .....3
  - FIRE F153—Wildland Firefighter III .....2
  - FIRE F157—Wildland Air Operations .....3
5. Minimum credits required ..... 11



UAF photo by JR Ancheta.

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EMT students (from left) Floyd Lewis, Quinten Johnson and Michael Bellia practice providing medical attention to fellow student Claire Todd during class at UAF's Community and Technical College.

# 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, 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 credits for a certificate and 60 semester credits for an associate degree, including transfer credits, at the 100-level or above. At least 15 semester credits applicable to any certificate or associate degree must be earned at UAF. A minimum cumulative 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 in courses required for your associate degree major. Some majors require higher GPAs for major course work.

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.

### MAJORS

You may declare a major when you are admitted to UAF as a degree undergraduate student. If you haven't chosen a major, you'll be enrolled as a general studies student. Nondegree 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.)

- **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/forms/](http://www.uaf.edu/reg/forms/). A change of major becomes

TABLE 18 **GENERAL UNIVERSITY REQUIREMENTS FOR CERTIFICATES AND ASSOCIATE DEGREES**

	<b>Certificate</b>	<b>Associate Degree</b>
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- in courses required for major. Some departments have higher requirements	No grade lower than C- in courses required for major. Some departments have higher requirements.
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

effective the semester it is submitted. Students who wish to change majors from one level to another level (e.g., 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 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 student registration procedure. If you do not enroll for a semester or more, or if you enroll through the nondegree 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 is available at [www.uaf.edu/reg/forms/](http://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 DegreeWorks and notify you once a decision on your petition has been received. 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.

### 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 nonrefundable 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 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 for students 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 steppingstone 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 earn only one A.A.

- **Associate of Applied Science**

The A.A.S. is for students 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 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 your major and overall. Students must earn a minimum grade of C- in all major courses. Some majors require higher GPAs for major course work. 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
<b>Communication</b>	<b>2-3</b>
Complete one of the following: <ul style="list-style-type: none"> <li>• ENGL F111X—Introduction to Academic Writing (3)</li> <li>• ABUS F170—Business English (3)</li> <li>• ABUS F271—Business Communications (3)</li> <li>• ENGL F211X—Academic Writing about Literature (3)</li> <li>• ENGL F212—Business, Grant and Report Writing* (3)</li> <li>• ENGL F213X—Academic Writing about the Social and Natural Sciences (3)</li> <li>• COMM F121X—Introduction to Interpersonal Communication (3)</li> <li>• COMM F131X—Fundamentals of Oral Communication: Group Context (3)</li> <li>• COMM F141X—Fundamentals of Oral Communication: Public Context (3) or successful completion of competency test</li> <li>• DEVS F104—University Communications (1-3)</li> <li>• DEVS F105—Intensive Reading Development (3)</li> <li>• Other program-approved discipline-based communication course or discipline-based courses with embedded communication content. (2-3)</li> </ul>	
* ENGL F212 does not fulfill the second half of the written communication requirement for the bachelor's degree.	
<b>Computation</b>	<b>2-3</b>
Complete one of the following: <ul style="list-style-type: none"> <li>• Any course at the F100-level or above in mathematical sciences (computer science, math or statistics). (3)</li> <li>• ABUS F155—Business Math (3)</li> <li>• DEVM F105—Intermediate Algebra (3)</li> <li>• ECE F117—Math Skills for Early Childhood Educators (3)</li> <li>• HLTH F116—Mathematics in Health Care (3)</li> <li>• HUMS F117—Math Skills for Human Services (3)</li> <li>• TTCH F131—Mathematics for the Trades (3)</li> <li>• Other program-approved discipline-based computation course or discipline-based courses with embedded computation content. (2-3)</li> </ul>	
<b>Human Relations</b>	<b>2-3</b>
Complete one of the following: <ul style="list-style-type: none"> <li>• ANTH F100X/SOC F100X—Individual, Society and Culture (s)(3)</li> <li>• ABUS F154—Human Relations (3)</li> <li>• ANL F287—Teaching Methods for Alaska Native Languages (h)(3)</li> <li>• ECE F104—Child Development: Prenatal, Infants and Toddlers (s)(3)</li> <li>• ECE F107—Child Development II: Preschool and Primary Years (s)(3)</li> <li>• ED/PSY F245—Child Development (s)(3)</li> <li>• HLTH F106—Human Behavior in Health Care (s)(3)</li> <li>• HUMS F120—Cultural Diversity in Human Services (3)</li> <li>• RHS F110—Cross-Cultural Bridging Skills (1) AND RHS F115—Issues of Personal Development (2)</li> <li>• Other program-approved discipline-based human relations or discipline-based courses with embedded human relations content. (2-3)</li> </ul>	
<b>Major specialty</b>	<b>at least 21</b>
<b>Electives to total</b>	<b>30</b>

# 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 steppingstone 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 UAF 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
<b>Communication</b>	<b>9</b>
<ul style="list-style-type: none"> <li>ENGL F111X—Introduction to Academic Writing (3)</li> </ul>	
Complete one of the following:	
<ul style="list-style-type: none"> <li>ENGL F211X—Academic Writing about Literature (3)</li> <li>ENGL F213X—Academic Writing about the Social and Natural Sciences (3)</li> </ul>	
Complete one of the following:	
<ul style="list-style-type: none"> <li>COMM F121X—Introduction to Interpersonal Communication (3)</li> <li>COMM F131X—Fundamentals of Oral Communication: Group Context (3)</li> <li>COMM F141X—Fundamentals of Oral Communication: Public Context (3) or successful completion of competency test</li> </ul>	
<b>Perspectives on the Human Condition (humanities and social sciences)</b>	<b>18</b>
Complete all of the following four courses:	
<ul style="list-style-type: none"> <li>ANTH F100X/SOC F100X—Individual, Society and Culture (3)</li> <li>ECON F100X or PS F100X—Political Economy (3)</li> <li>HIST F100X—Modern World History (3)</li> <li>ENGL/FL F200X—World Literature (3)</li> </ul>	12
Complete one of the following three courses:	
<ul style="list-style-type: none"> <li>ART/MUS/THR F200X—Aesthetic Appreciation: Interrelationship of Art, Drama and Music (3)</li> <li>HUM F201X—Unity in the Arts (3)</li> <li>ANS F202X—Aesthetic Appreciation of Alaska Native Performance (3)</li> </ul>	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 F113X—Concepts and Contemporary Applications of Mathematics (3)
- MATH F151X—College Algebra for Calculus\* (4)
- MATH F152X—Trigonometry (3)
- MATH F156X—Precalculus (4)
- MATH F122X—Algebra for Business and Economics\* (3)
- STAT F200X—Elementary Probability and Statistics (3)

\* No credit may be earned for more than one of MATH F151X or F122X.

Or complete one of the following\*:

- MATH F251X—Calculus I\*\* (4)
- MATH F252X—Calculus II (4)
- MATH F253X—Calculus III (4)
- MATH F222X—Calculus for Business and Economics\*\* (4)
- MATH F232X—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 F251X, MATH F222X or MATH F232X.

### Natural Sciences 8

Complete any two (4-credit) courses.

- ATM F101X—Weather and Climate of Alaska (4)
- BIOL F100X—Human Biology (4)
- BIOL F101X—Introduction to Animal Behavior (4)
- BIOL F103X—Biology and Society (4)
- BIOL F104X—Natural History (4)
- BIOL F115X—Fundamentals of Biology I (4)
- BIOL F116X—Fundamentals of Biology II (4)
- BIOL F120X—Introduction to Human Nutrition (4)
- BIOL F213X—Human Anatomy and Physiology I (4)
- BIOL F214X—Human Anatomy and Physiology 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 F175X—Astronomy (4)
- PHYS F211X—General Physics (4)
- PHYS F212X—General Physics (4)
- PHYS F213X—Elementary Modern Physics (4) 8

<b>Library and Information Research</b>	<b>0-1</b>
Successful completion of library skills competency test or LS F100X or F101X	0-1
<b>Total credits required</b>	<b>38-39</b>
Students planning to go on to a bachelor's degree are advised to select courses meeting remaining core requirements and courses designated within bachelor's degree majors and minors.	
<b>Minimum credits required for degree</b>	<b>60</b>

## 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
<b>Communication</b>	<b>9</b>
<b>Written Communication</b>	<b>6</b>
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.	
<b>Oral Communication</b>	<b>3</b>
Complete one of the following:	
• COMM F121X—Introduction to Interpersonal Communication (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	
<b>Computation</b>	<b>3</b>
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)	
• TTCH F131—Mathematics for the Trades (3)	
• Other program-approved discipline-based computation course or discipline-based course with embedded computation content (3)	

<b>Human Relations</b>	<b>3</b>
Complete one of the following:	
• ANTH F100X/SOC F100X—Individual, Society and Culture (s)(3)	
• ABUS F154—Human Relations (3)	
• ANL F287—Teaching Methods for Alaska Native Languages (h)(3)	
• ECE F104—Child Development: Prenatal, Infants and Toddlers (s)(3)	
• ECE F107—Child Development II: Preschool and Primary Years (s)(3)	
• ED/PSY F245—Childhood Development (s)(3)	
• HLTH F106—Human Behavior in Health Care (s)(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 course or discipline-based course with embedded human relations content (3)	
<b>Major specialty</b>	<b>at least 30</b>
<b>Electives to total</b>	<b>60</b>
<b>Minimum credits required for degree</b>	<b>60</b>

## 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 steppingstone to a science-related baccalaureate program. You may earn only one A.S. degree.

Requirements	Credits
<b>Communication</b>	<b>9</b>
• ENGL F111X—Introduction to Academic Writing (3)	
• ENGL F213X—Academic Writing about the Social and Natural Sciences (3)	
Complete one of the following:	
• COMM F121X—Introduction to Interpersonal Communication (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	
<b>Humanities and Social Sciences</b>	<b>15</b>
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 Alaska 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	
<b>Mathematics</b>	<b>4</b>
• MATH F151X—College Algebra for Calculus (4)*	
Or complete one of the following:	
• MATH F251X—Calculus I (4)	
• MATH F232X—Calculus for Life Sciences (4)	
* No credit may be earned for more than one of MATH F151X or F122X.	

<b>Natural Sciences</b>	<b>16</b>
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- ATM F101X—Weather and Climate of Alaska (4)
- BIOL F101X—Introduction to Animal Behavior (4)
- BIOL F103X—Biology and Society (4)
- BIOL F104X—Natural History (4)
- BIOL F115X—Fundamentals of Biology I (4)
- BIOL F116X—Fundamentals of Biology II (4)
- BIOL F120X—Introduction to Human Nutrition (4)
- BIOL F213X Human Anatomy and Physiology I (4)
- BIOL F214X Human Anatomy and Physiology 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 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.

<b>Library and Information Research</b>	<b>0-1</b>
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- Successful completion of library skills competency test or LS F100X OR F101X

<b>Concentration specialty</b>	<b>at least 15</b>
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<b>Minimum credits required for degree</b>	<b>60</b>
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# Certificate and Associate Degree Programs

## ACCOUNTING, APPLIED

College of Rural and Community Development  
 Bristol Bay Campus 907-842-5109  
 Chukchi Campus 907-442-3400  
 Interior Alaska 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/accounting/](http://www.ctc.uaf.edu/programs/accounting/)

### A.A.S. Degree

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

The applied accounting program prepares students for entry- and midlevel 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 businesspeople and provide training to enhance business success. The applied accounting program prepares a student to enter the School of Management's B.B.A. program in accounting to earn the 150 credits required to take the Uniform CPA Examination 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

- Complete the general university requirements (page 93).
- Complete the A.A.S. degree requirements. (See page 97. As part of the A.A.S. degree requirements, it is recommended, though not required, that students complete ABUS F154 for the human relations requirement and ABUS F155 for the computation requirement.)
- 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 Nonprofits (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
- Minimum credits required .....

4. Minimum credits required .....60

\* Students must earn a C- grade or better in each course.

### Minor

- Complete the following:
 

ABUS F101—Principles of Accounting I.....	3
ABUS F201—Principles of Accounting II (3)	
or ABUS F235—Fund Accounting for Nonprofits (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
- Minimum credits required .....

## ACCOUNTING TECHNICIAN

College of Rural and Community Development  
 Bristol Bay Campus 907-842-5109  
 Chukchi Campus 907-442-3400  
 Interior Alaska 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/accounting/](http://www.ctc.uaf.edu/programs/accounting/)

### 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 businesspeople and provide training 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 certified public accountant 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

- Complete the general university requirements (page 93).
- Complete the following certificate requirements:
  - 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
  - Complete one of the following computation courses:
 

ABUS F155—Business Math (3)	
or MATH at the 100 level or above (3) .....	3
  - Complete the following:
 

ABUS F154—Human Relations (3)	
or other UAF certificate-approved human relations course (3) ....	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 Nonprofits (3) .....	3
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 Alaska 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/](http://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's Training and Employment Administration.

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, Training and Employment Administration. 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 Alaska 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/](http://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 steppingstone 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 Alaska Campus  
 907-474-5439  
[www.uaf.edu/iac/](http://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.

## AUTOMOTIVE TECHNOLOGY

College of Rural and Community Development  
Community and Technical College  
907-455-2932  
[www.ctc.uaf.edu/programs/Automotive/](http://www.ctc.uaf.edu/programs/Automotive/)

### Certificate

Minimum Requirements for Certificate: 34 credits

The automotive technology program gives students the education and training 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— Suspension Alignment.....                 | 4 |
| AUTO F190—Automotive Practicum I.....                | 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 .....
- \* Students must earn a C grade 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/](http://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

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 beginning 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—Nonmetallic 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
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—Nonmetallic 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 or better in each course.	

**BUSINESS, APPLIED**

College of Rural and Community Development  
 Bristol Bay Campus 907-842-5109  
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 Interior Alaska 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/abus/](http://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 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, 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)  
or BA F307—Introductory Human Resource Management (3)....3
  - ABUS F232—Contemporary Management Issues (3)  
or ECON F201—Principles of Economics I: Microeconomics (3)  
or ECON F202—Principles of Economics II: Macroeconomics (3).....3
  - ABUS F241—Applied Business Law (3)  
or ABUS F242—Employment Law (3)  
or BA F317—Employment Law (3).....3
  - ABUS F260—Marketing Practices (3)  
or ABUS F263—Public Relations (3)  
or BA F343—Principles of Marketing (3).....3
  - BA F151—Introduction to Business.....3

4. Complete one of the following concentrations:\*

**Administrative Management**

- a. 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 F264—Filing/Records Management.....3
  - ABUS, CIOS or CITS electives appropriate to skill level.....3
- b. Choose 6 credits from the following:
  - ABUS F183—Advanced Job Readiness.....2
  - ABUS F199—Practicum in Applied Business.....1
  - CIOS F130—Microcomputer Word Processing.....3
  - CIOS F135—Microcomputer Spreadsheets.....3
  - CIOS F150—Computer Business Applications.....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).....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 Nonprofits (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 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

**Human Resources**

Complete the following:

- ABUS F141—Payroll Accounting.....3
- ABUS F178—Professionalism.....3
- ABUS F231—Introduction to Personnel (3)  
or BA F307—Introductory Human Resource Management (3)....3
- ABUS F242—Employment Law (3)  
or BA F317—Employment Law (3).....3
- CIOS F135—Microcomputer Spreadsheets.....3
- CIOS F240—Microcomputer Databases.....3
- ABUS, ACCT, BA or CIOS electives.....3

**Management**

a. Complete the following:

- ABUS, ACCT, BA, ECON, MATH or STAT or other department-approved electives.....21

b. Recommended courses include:

- MATH F122X, MATH F222X, 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).....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 for Nonprofits .....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)  
 or BA F317—Employment Law (3).....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 F273—Managing a Small 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 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 F272—Small-Business Planning (3)  
 or ABUS F273—Managing a Small 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  
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 Northwest Campus 907-443-2201  
 Community and Technical College 907-455-2800  
[www.ctc.uaf.edu/programs/abus/](http://www.ctc.uaf.edu/programs/abus/)

**Certificate**

Minimum Requirements for Certificate: 30-36 credits

Planning and preparation are keys to success in business. The applied business management certificate provides students with the basic principles to run a business effectively. Graduates of the program will have the foundation of contemporary management skills to successfully lead private, public and nonprofit 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, Marketing, Office Administration, Public Management, Recreational Guiding, Retail Management and Tourism.**

1. Complete the general university requirements (page 93).

2. Complete the following certificate requirements:

a. Complete 3 credits from 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 an A.A.S.-approved human relations course:  
 ABUS F154—Human Relations (recommended) .....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 Nonprofits (3) .....3  
 ABUS F179—Fundamentals of Supervision (3)  
 or BA F307 Introductory Human Resource Management (3).....3  
 ABUS F232—Contemporary Management Issues (3)  
 or ECON F201 Principles of Economics I: Microeconomics (3)  
 or ECON F202 Principles of Economics II:  
 Macroeconomics (3).....3  
 ABUS F260—Marketing Practices (3)  
 or ABUS F263—Public Relations (3)  
 or BA F343 Principles of Marketing (3).....3

**Human Resources**

ABUS F141—Payroll Accounting.....3  
 ABUS F179—Fundamentals of Supervision.....3  
 ABUS F231—Introduction to Personnel (3)  
 or BA F307—Introductory Human Resource Management (3) .....3  
 ABUS F242—Employment Law (3)  
 or BA F317—Employment Law (3).....3

**Marketing**

ABUS F175—Customer Service .....3  
 ABUS F178—Professionalism.....3  
 ABUS F260—Marketing Practices (3)  
 or ABUS F263—Public Relations (3)  
 or BA F343—Principles of Marketing (3) .....3  
 CIOS F200—level graphics or web design elective .....3

**Office Administration**

- a. Complete the following:  
 ABUS F170—Business English .....3  
 ABUS F182—Office Procedures .....3
- b. Choose 6 credits from the following:  
 ABUS F183—Advanced Job Readiness.....2  
 ABUS F199—Practicum in Applied Business .....1  
 CIOS F130—Microcomputer Word Processing.....3  
 CIOS F135—Microcomputer Spreadsheets .....3  
 CIOS F150—Computer Business Applications.....3

**Public Management**

ABUS F235—Fund Accounting for Nonprofits .....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

**Retail Management**

ABUS F179—Fundamentals of Supervision (3)  
 or BA A231\*—Fundamentals of Supervision (3) .....3  
 ABUS F231—Introduction to Personnel.....3  
 ABUS F260—Marketing Practices (3)  
 or BA A260\* Marketing Practices (3) .....3  
 BA A266\*—Retailing Management.....3  
 CIOS F150—Computer Business Applications (3)  
 or CIOS A103\*—Introduction to Personal Computers (3).....3  
 COMM F131X—Fundamentals of Oral Communication: Group  
 Context (3)  
 or COMM F141X—Fundamentals of Oral Communication:  
 Public Context (3)  
 or COMM A111\*—Fundamentals of Oral Communication (3)  
 or CIOS A261A\*—Interpersonal Skills in Organizations (3)  
 or COMM A237\*—Interpersonal Communication (3)  
 or COMM F180—Introduction to Human Communication (3).....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 .....30-36

*Note: Other courses specific to individual education and career goals may be substituted with program approval.*

\* Courses offered via distance delivery from UAA

**COMMUNITY HEALTH**

College of Rural and Community Development  
 Bristol Bay Campus 907-842-5109  
 Chukchi Campus 907-442-3400  
 Interior Alaska Campus 907-474-5439  
 Kuskokwim Campus 907-543-4500  
 Northwest Campus 907-443-2201

**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 the community health aide'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 community health practitioner (CHP) statewide examination.

Upon successful completion of all certification requirements, students are awarded a 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 executive dean for Rural, Community and Native Education.

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 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/](http://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, multifamily 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 gives students 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 95).
  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 or ENGL F213X, and COMM F131X or COMM F141X for the communications requirement, and MATH F151X 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
    - 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 F152X—Trigonometry.....3
    - PHYS F103X—College Physics .....4
  4. Minimum credits required .....65
- \* Students must earn a C- grade or better in each course.

## CONSTRUCTION TRADES TECHNOLOGY

College of Rural and Community Development  
 Bristol Bay Campus 907-842-5109  
 Chukchi Campus 907-442-3400  
 Interior Alaska Campus 907-474-5439  
 Kuskokwim Campus 907-543-4500  
 Northwest Campus 907-443-2201  
 Community and Technical College 907-455-2800  
[www.uaf.edu/iac/](http://www.uaf.edu/iac/)

### Certificate

**The A.A.S. program is presently suspended.**

Minimum Requirements for Certificate: 30 credits;  
 for Degree: 70-73 credits

The construction trades technology program is designed to prepare students to work in the construction industry, including in locations with a projected shortage of skilled workers.

This program gives students fundamental knowledge of construction industry expectations in carpentry, facility maintenance and sustainable energy, 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 residential construction trade and/or residential construction management skills.

A strong desire to work in the construction industry is important. Students must be willing to work collaboratively with industry employees in their local communities to fulfill the practicum components of courses.

### Certificate Program

- Complete the general university requirements (page 93).
- Complete the certificate requirements. (See page 95. As part of the certificate requirement, complete 3 credits each in the communication and human relations requirements.)
- Complete one of the following computation courses:  
 CTT F106—Construction Mathematics (3)  
 or TTCH F131—Mathematics for the Trades (3).....3
- Complete the following 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).....3  
 HLTH F122—First Aid and CPR.....1
- Complete one of the following concentrations:\*

#### Carpentry

- 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 ..... 1-3

#### Facility Maintenance

- 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—Residential Heating Controls..... 2  
 CTT F151—Introduction to Plumbing Tools and Drawings ..... 1  
 CTT F153—Plastic and Copper Pipe and Fittings..... 1  
 Other advisor approved electives related to the concentration ..... 3  
 CTT F199—Student Practicum I ..... 1-3  
*Students must take a minimum of 2 credits in CTT F199.*

### Sustainable Energy

- DEV M F105—Intermediate Algebra ..... 3
- ENVI F220—Introduction to Sustainable Energy ..... 3
- Complete at least 9 credits from the following courses:  
 CT S201—Cold Climate Construction (3)\*\*  
 CTT F100—Construction Technology Core (3)  
 CTT F160—Photovoltaic Systems—Part I (5)  
 CTT F161—Photovoltaic Systems—Part II (5)  
 CTT F250—Current Topics in Construction Trades (1-3)  
 ENVI F101—Introduction to Environmental Science (3)  
 ENVI F120—Home Energy Basics (1)  
 PHYS F102X—Energy and Society (4)  
 or other advisor approved courses related to the concentration ..... 9
- CTT F199—Student Practicum I ..... 1-3  
*Students must take a minimum of 3 credits in CTT F199.*
- Minimum credits required ..... 30  
 \* *Students must earn a C- grade or better in each course.*  
 \*\* *CT S201 is offered by University of Alaska Southeast.*

## CULINARY ARTS AND HOSPITALITY

College of Rural and Community Development  
 Community and Technical College  
 907-455-2800  
[www.ctc.uaf.edu/programs/culinary/](http://www.ctc.uaf.edu/programs/culinary/)

### Certificate; A.A.S. Degree

Minimum Requirements for Certificates: 30 credits;  
 for Degree: 60 credits

The Culinary Arts and Hospitality Department prepares students for careers in this ever-expanding field. Graduates can seek employment in various food service operations or in management of restaurants, bakeries, hotels, hospitals, camps or any other facility that requires food service as part of its operation. Certificates in culinary arts or baking and pastry arts as well as an associate degree in culinary arts are offered.

### Certificate Program — Culinary Arts

- Complete the general university requirements (page 93).
- Complete the certificate requirements. (See page 95. As part of the certificate requirements, CAH F256 is recommended to complete the computation requirement and CAH F255 is recommended to complete the human relations requirement.)
- Complete the following:  
 CAH F101—Introduction to the Culinary Field..... 1  
 CAH F140—Culinary I — Principles and Techniques ..... 4  
 CAH F146—Introduction to Baking and Pastry ..... 4  
 CAH F150—Food Service Sanitation ..... 2
- Complete 10-13 credits from the following:  
 CAH F141—Culinary II — Stocks, Soups and Sauces ..... 4  
 CAH F154—Food and Beverage Service..... 2  
 CAH F160—Principles of Nutrition ..... 2  
 CAH F170—Gourmet Cooking..... 2  
 CAH F172—Gourmet Asian Cooking ..... 2  
 CAH F174—Vegetarian Cooking..... 2  
 CAH F175—Protein Fabrication..... 3  
 CAH F176—Heart-Healthy and Diabetic Cooking..... 2

CAH F230—Menu Planning .....	1
CAH F242—Culinary III — Vegetables and Starch.....	2
CAH F243—Culinary IV — À la Carte Cookery .....	4
CAH F250—Garde-Manger .....	4
5. Minimum credits required .....	30

**Certificate Program — Baking and Pastry Arts**

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements. (See page 95. As part of the certificate requirements, CAH F256 is recommended to complete the computation requirement and CAH F255 is recommended to complete the human relations requirement.)
3. Complete the following:
 

CAH F101—Introduction to the Culinary Field.....	1
CAH F140—Culinary I — Principles and Techniques .....	4
CAH F146—Introduction to Baking and Pastry .....	4
CAH F150—Food Service Sanitation.....	2
CAH F248—Intermediate Baking and Pastry .....	4
4. Choose 6-9 credits from the following:
 

CAH F117—Art in Cake Icing .....	2
CAH F154—Food and Beverage Service.....	2
CAH F160—Principles of Nutrition .....	2
CAH F161—Pastry Tube Art.....	1.5
CAH F171—Gourmet Baking.....	2
CAH F176—Heart-Healthy and Diabetic Cooking.....	2
CAH F180—Artisan Breads.....	2
CAH F181—International Breads .....	2
CAH F230—Menu Planning .....	1
5. Minimum credits required .....

**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 requirement, CAH F255 is recommended to complete the human relations requirement.)
  3. Complete the following program (major) requirements:\*
 

CAH F101—Introduction to the Culinary Field.....	1
CAH F140—Culinary I — Principles and Techniques .....	4
CAH F141—Culinary II — Stocks, Soups and Sauces .....	4
CAH F146—Introduction to Bakery and Pastry .....	4
CAH F150—Food Service Sanitation .....	2
CAH F154—Food and Beverage Service.....	2
CAH F160—Culinary Nutrition .....	2
CAH F175—Protein Fabrication.....	3
CAH F199—Culinary Arts Externship.....	2
CAH F230—Menu Planning .....	1
CAH F242—Culinary III — Vegetables and Starches .....	4
CAH F243—Culinary IV — À la Carte Cookery .....	4
CAH F248—Intermediate Baking and Pastry .....	4
CAH F250—Garde-Manger .....	4
CAH F253—Storeroom Purchasing and Receiving .....	2
CAH F256—Restaurant and Hospitality Cost Management.....	2
  4. Minimum credits required .....
- \* Students must earn a C- grade 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/](http://www.ctc.uaf.edu/programs/health/dh/)

**A.A.S. Degree**

**Admissions to this program are presently suspended.**  
 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.
5. Current CPR certification for health care providers.
6. Complete the required prerequisite with a C 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 F213X—Human Anatomy and Physiology I .....	4
BIOL F214X—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, [fjdh@uaf.edu](mailto:fjdh@uaf.edu), or [www.ctc.uaf.edu/programs/health/dh/](http://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 of 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 or better in each course.	

DSL T F254—Engine.....	5
MECN F103—Starting and Charging Systems.....	3
MECN F210—Hydraulics.....	3
4. Minimum credits required.....	36
* Students must earn a C grade or better in each course.	

## DIESEL/HEAVY EQUIPMENT

College of Rural and Community Development  
Community and Technical College  
907-455-2843  
[www.ctc.uaf.edu/programs/diesel/](http://www.ctc.uaf.edu/programs/diesel/)

### Certificate

Minimum Requirements for Certificate: 36 credits

The diesel and heavy equipment mechanics program offers 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:*	
DSL T F101—Safety Including Rigging and Lifting.....	1
DSL T F103—Basic Equipment and Truck Operation.....	1
DSL T F105—Preventive Maintenance.....	3
DSL T F107—Basic Electrical Systems and Electrical Fuel Injection.....	3
DSL T F110—Basic Industrial Fabrication.....	2
DSL T F111—Diesel Emissions.....	2
DSL T F123—Heavy Duty Braking Systems.....	3
DSL T F154—Diesel Fuel Injection.....	3
DSL T F201—Manual Transmissions and Differentials.....	3
DSL T F202—Heavy Duty Automatic Transmissions.....	2
DSL T F210—Heavy Equipment Fabrication.....	2

## DRAFTING TECHNOLOGY

College of Rural and Community Development  
Community and Technical College  
907-455-2845  
[www.ctc.uaf.edu/programs/drafting/](http://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 multifunctional 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).	
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:	
a. <b>Architectural Drafting</b>	
CM F102—Methods of Building Construction.....	3
CM F123—Codes and Standards.....	3
DRT F140—Architectural Drafting.....	3
b. <b>Civil Drafting</b>	
CM F102—Methods of Building Construction.....	3
CM F213—Civil Technology.....	4
DRT F150—Civil Drafting.....	3
c. <b>Information Technology</b>	
CITS F203—Information Technology Support Fundamentals.....	4
CITS F204—Introduction to Network Support and Administration.....	3
CITS F261—Computer and Network Security.....	3
d. <b>Mechanical and Electrical Drafting</b>	
CM F102—Methods of Building Construction.....	3
CM F142—Mechanical and Electrical Technology.....	4
DRT F155—Mechanical and Electrical Drafting.....	3

**e. 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

**f. 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 F260 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 F121—Construction Documents and Drawings .....3
  - DRT F260—Drafting Internship..... 3-6
  - CM F201—Construction Project Management .....3
  - ES F101—Introduction to Engineering\*\*.....3
5. Minimum credits required .....60-63

\* Students must earn a C- grade 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 Alaska 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/](http://www.ctc.uaf.edu/programs/e-childhood/)

**Certificate; A.A.S. Degree**

**The certificate program is presently suspended.**  
 Minimum Requirements 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.

This 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 meet state of Alaska requirements for employment as directors or teachers in licensed centers, as well as aids in elementary schools. Course work also fulfills minor or concentration requirements for degrees in other disciplines.

Students entering the A.A.S. degree 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 degree.

The courses for the A.A.S. degree lay the foundation for the B.A. in child development and family studies.

**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 F213—Curriculum II: Thinking, Reasoning and Discovering (3)  
 or ECE F214—Curriculum III: Infants and Toddlers (3) .....3
  - ECE F229—Foundations in 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) .....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 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 F-93) and current issue (ECE F249) courses..... 15
3. Minimum credits required ..... 18

**ENVIRONMENTAL STUDIES**

College of Rural and Community Development  
 907-842-5109  
[www.uaf.edu/bbc/](http://www.uaf.edu/bbc/)

**Certificate**

Minimum Requirements for Certificate: 30-35 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 steppingstone 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).<sup>\*</sup> Complete the following:
  - 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:  
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
3. Complete the following program requirements:<sup>\*</sup>
  - a. Complete two science foundation courses:  
ATM F101X—Weather and Climate of Alaska.....4  
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  
GEOG F111X—Earth and Environment: Elements of Physical Geography .....4  
MSL F111X—The Oceans.....4
  - b. Complete the following:  
ENVI F101—Introduction to Environmental Science .....3  
ENVI F110—Introduction to Water Quality I: Measurement.....1  
ENVI F130—Introduction 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
4. Complete one of the following electives:  
ATM F101X—Weather and Climate of Alaska.....4  
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  
GEOG F111X—Earth and Environment: Elements of Physical Geography.....4  
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
5. Minimum credits required .....30-35

<sup>\*</sup> Students must earn a C- grade or better in each course.  
<sup>\*\*</sup> Cannot be used for elective credit if used as computational credit.  
<sup>\*\*\*</sup> Similar level and subject matter.

**ETHNOBOTANY**

College of Rural and Community Development  
Kuskokwim Campus  
907-543-4500 or 800-478-5822  
[www.bethel.uaf.edu](http://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.

**Certificate Program**

1. Complete the general university requirements (page 93).
2. Complete the certificate requirements (page 95).<sup>\*</sup>
3. Complete the following:
  - 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 F113X—Concepts and Contemporary Applications of Mathematics (3)  
or MATH F151X—College Algebra for 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:<sup>\*</sup>
  - 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:  
ENGL F212—Business, Grant and Report Writing (3)  
or ENGL F213X—Academic Writing About the Social and  
Natural Sciences (3) .....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.....3-4
- 5. Minimum credits required .....30-32  
\* *Students must earn a C- grade or better in each course.*

- 4. General electives .....6
- 5. Minimum credits required .....69  
\* *Students must earn a C- grade or better in each course.*  
*Note: Major electives and general electives must be approved by the student's  
advisor.*

**FIRE SCIENCE**

College of Rural and Community Development  
Community and Technical College  
907-455-2853  
[www.ctc.uaf.edu/programs/emergency/](http://www.ctc.uaf.edu/programs/emergency/)

**A.A.S. Degree**

Minimum Requirements for Degree: 63-69 credits

The fire science program provides classroom education, hands-on training and practical vocational experience through local fire and rescue organizations.

Instructors provide a high level of technical expertise on a variety of emergency and fire science 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.

**Major — A.A.S. Degree**

**Concentrations: Hazardous Materials Control, Municipal Fire Control, Public Safety and Wildland Fire Control**

**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 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 F220—Emergency Services Safety, Health and Survival.....3
    - FIRE F231—Hazardous Materials Tactical Operations.....3
    - FIRE F249—Computer Aided Management of Emergency  
Operations .....3
    - FIRE F293—Special Topics .....3

**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 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 or better in each course.

**Wildland Fire Control**

- Complete the general university requirements (page 93).
- Complete the A.A.S. degree requirements (page 97).
- Complete the following program (major) requirements:\*
  - Complete the following:
 

EMS F170—EMT: Emergency Medical Technician I .....	6
FIRE F151—Wildland Firefighter I.....	3
FIRE F152 Wildland Firefighter II.....	3
FIRE F153—Wildland Firefighter III .....	2
FIRE F154 Basic Wildland Fire Safety .....	1.5
FIRE F155—Wildland Fire Behavior I .....	2
FIRE F157—Wildland Air Operations.....	3
FIRE F159—Wildland Fire Interface Operations.....	2
FIRE F176 Wildland Fire Ignition Operations .....	1
FIRE F251 Wildland Firefighter IV .....	3
FIRE F252—Wildland Fire Prevention I.....	3
FIRE F254—Incident Finance and Administration.....	1.5
FIRE F255—Wildland Fire Behavior II.....	2
  - Complete 15 credits from the following major elective courses:\*
 

FIRE F161—Incident Logistics Function .....	2
FIRE F163 Wildland Fire Dispatch I.....	2
FIRE F165—ICS and the Incident Planning Function.....	2
FIRE F170 Introduction to Incident Information.....	2
FIRE F216—Methods of Instruction for Emergency Services Training.....	3
FIRE F253 Wildland Fire Investigation I .....	3
FIRE F257—Wildland Fire Helicopter Management.....	2
FIRE F262—Wildland Fire Tactical Operations.....	2
FIRE F264—Incident Business Practices.....	1.5
FIRE F276 Prescribed Fire I.....	2
FIRE F277 Prescribed Fire II.....	2
FIRE F279 Prescribed Fire III .....	2
- Minimum credits required .....

\* Students must earn a C- grade or better in each course.  
 Note: Major electives and general electives must be approved by the student's advisor.

**Minor**

- 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
- Minimum credits required .....

**HEALTH, ALLIED**

College of Rural and Community Development  
 Community and Technical College  
 907-455-2887  
[www.ctc.uaf.edu/programs/health/](http://www.ctc.uaf.edu/programs/health/)

**Certificate; A.A.S. Degree**

Minimum Requirements for Certificate: 30-42 credits;  
 for Degree: 60-61 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.

**Phlebotomy**

Training is also available in phlebotomy. A student who completes the phlebotomy course 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 proof of immunity to Hepatitis B, measles, mumps, rubella, varicella (chicken pox), document a flu shot, a completed two-step PPD (Purified Protein Derivative) for tuberculosis within the past year, and any other immunizations required by the externship site, prior to registering for the class.

**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 F105.

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 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 F103X or CHEM F105X or have instructor permission for to register for BIOL F213X or BIOL F214X.

**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 Technology**

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/alliedhealth/academics/radiologictechnology/](http://www.uaa.alaska.edu/alliedhealth/academics/radiologictechnology/).

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](mailto:fyhealth@uaf.edu); or at [www.ctc.uaf.edu/health/](http://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 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:\*
    - ENGL F111X—Introduction to Academic Writing (3)
    - or ABUS F271—Business Communications (3).....3
    - CIOS F150—Computer Business Applications (3)
    - or HLTH F130—Medical Office Technology (3).....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 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 F130—Medical Office Technology.....3
    - HLTH F132—Administrative Procedures I.....2
    - HLTH F142—Clinical Procedures I .....4
    - HLTH F234—Administrative Procedures II.....4
    - HLTH F236— Outpatient Health Care 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 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
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) or HLTH F130—Medical Office Technology (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— Outpatient Health Care 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 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: <i>Communications</i> ENGL F111X—Introduction to Academic Writing .....	3
<i>Computation</i> DEV M F105—Intermediate Algebra (3) or HLTH F116—Mathematics in Health Care (3) or MATH at the 100 level or higher (3) .....	3
<i>Human Relations</i> 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 F213X—Human Anatomy and Physiology.....	4
BIOL F214X—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 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 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) or HLTH F130—Medical Office Technology (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— Outpatient Health Care 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 or better in each course.	

**HIGH LATITUDE RANGE MANAGEMENT**

College of Rural and Community Development  
Northwest Campus  
907-443-2201  
[www.nwc.uaf.edu](http://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.

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:
    - a. Complete the following communication course:  
ENGL F111X—Introduction to Academic Writing.....3
    - b. Complete one of the following computation courses:  
MATH F113X—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
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 Domesticated Ungulates .....	2
HLRM F201—Field Techniques for Range Management.....	2
HLRM F205—Report Writing in Range Management.....	2
  5. Minimum credits required .....31
- \* Students must earn a C- grade or better in each course.

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 F101—Introduction to Psychology .....	3
4. 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
or HUMS F210—Crisis and Grief 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

- b. Complete one of the following family courses for Addictions Counseling and Interdisciplinary concentration:\*
 

ECE F342O—Family Relationships.....	3
HUMS F140—Family Dynamics .....	3
RHS F120—Family Systems I.....	2
PSY F240—Lifespan Developmental Psychology.....	3

#### Behavioral Health

- a. Complete the following
 

HUMS F205—Basic Principles of Group Counseling .....	3
HUMS F210—Crisis and Grief Counseling .....	3
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 .....	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 .....	3
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**Justice Majors:**

JUST F110—Introduction to Justice.....	3
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## HUMAN SERVICES

College of Rural and Community Development  
 Bristol Bay Campus 907-842-5109  
 Chukchi Campus 907-442-3400  
 Interior Alaska Campus 907-474-5439  
 Kuskokwim Campus 907-543-4500  
 Northwest Campus 907-443-2201  
 Community and Technical College 907-455-2842  
[www.ctc.uaf.edu/programs/hums/](http://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.

### Interdisciplinary Concentration

- 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.
  - 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 within the UA system (UAA, RHS, PWSCC, etc.) that are 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 .....	3
  - Minimum credits required .....63
- \* Students must earn a C grade or better in each course.

### For students with the Rural Human Services Certificate (up to 27 credits accepted as a block of courses):\*

- Complete the general university requirements (page 93).
  - Complete the A.A.S. degree requirements (page 97).
  - Complete the following:\*
 

HUMS F101—Introduction to Human Services.....	3
HUMS F301—Ethics in Human Service .....	3
PSY F101—Introduction to Psychology .....	3
PSY F240—Lifespan Developmental Psychology.....	3
  - Complete three of the following courses:\*
 

HUMS F205—Basic Principles of Group Counseling .....	3
HUMS F280—Prevention and Community Development .....	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
  - Minimum credits required .....63
- \* Students must earn a C grade or better in each course.

### Minor

#### Option 1

- Complete one concentration in human services\* .....15
- Complete HUMS elective credits\* .....3
- Minimum credits required\* .....18

#### Option 2

- Complete HUMS-approved\*\* elective credits.....18
  - Minimum credits required\* .....18
- \* Students must earn a C grade or better in each course.  
 \*\* Electives for Option 2 must be approved by the human services program coordinator.

### Alaska Chemical Dependency Counselor Certification

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.

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  
[www.ctc.uaf.edu/its/](http://www.ctc.uaf.edu/its/)

### Certificate; A.A.S. Degree

Minimum Requirements for Certificate: 30 credits;  
 for A.A.S. Degree: 60 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 computing technology, network and cybersecurity, and network and system 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

- Complete the general university requirements (page 93).
- 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.)
- Complete the following program (major) requirements\*:
 

CITS F203—Information Technology Support Fundamentals.....	4
CITS F204—Introduction to Network Support and Administration .....	3
CITS F212—Server Operating Systems.....	3
CITS F261—Computer and Information Security.....	3
- Complete 8-9 credits from the following or program coordinator-approved courses\*:
 

CIOS F128—Using and Configuring PC Operating Systems .....	3
CIOS F130—Microcomputer Word Processing.....	1-3
CIOS F135—Microcomputer Spreadsheets .....	1-3

CIOS F150—Computer Business Applications.....	1-3
CIOS F189—Microcomputer Applications: Topics .....	1-3**
CIOS F233—Desktop Publishing.....	1-3
CIOS F240—Microcomputer Databases.....	1-3
CIOS F255—Microcomputer Graphics.....	1-3
CIOS F258—Digital Photography.....	1-3
CITS F201—Microcomputer Operating Systems Support .....	1-3
CITS F219—Microcomputer Operating Systems: Topics.....	1-4**
CITS F220—Implementing Internet Tools and Technologies.....	3
CITS F221—Graphics and Multimedia for the Web .....	3
CITS F222—Website Design.....	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 F262—Cybersecurity Defense and Countermeasures.....	3
CITS F263—Network Security Penetration Testing .....	3
CITS F265—Directory Services Administration .....	3
CITS F282—IT Troubleshooting Skills.....	1-3
CITS F289—Information Technology: Topics.....	1-3
5. Pass a certification review requiring students to demonstrate proficiency in the following skill areas: operating systems, hardware, and network support and troubleshooting.**	
6. Minimum credits required .....	30

**Major — A.A.S. Degree**

**Concentrations: Computing Technology, Network and Cybersecurity, and Network and System Administration**

- Complete the general university requirements (page 93).
- 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.)
- Complete the following program (major) requirements:\*
 

CITS F204—Introduction to Network Support and Administration .....	3
CITS F205—Introduction to Microcomputer Programming (1-3) 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 Network Security .....	3
CITS F281—Professional Practice in IT.....	3
CITS F284—Independent Project (1-3) or CITS F285—Cooperative Work Experience (3) .....	3
- Complete an additional 6 credits from CIOS, CITS or CS electives.....
- Complete one of the following concentrations:\*

**Computing Technology**

Complete 21-22 credits from the following or from program coordinator-approved courses:

CITS F201—Microcomputer Technology Support.....	1-3
CITS F203—Information Technology Support Fundamentals.....	4
CITS F220—Implementing Internet Tools and Technologies.....	3
CITS F221—Graphs and Multimedia for the Web .....	3
CITS F222—Website Design.....	1-3
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 F262—Cybersecurity Defense and Countermeasures.....	3
CITS F263—Network Security Penetration Testing .....	3
CITS F265—Directory Services Administration .....	3
CITS F282—IT Troubleshooting Skills.....	1-3
CITS F289—Information Technology: Topics.....	1-3

**Network and Cybersecurity**

Complete the following:

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 F262—Cybersecurity Defense and Countermeasures.....	3
CITS F263—Network Security Penetration Testing .....	3

**Network and System Administration**

Complete the following:

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 Network Infrastructure Services.....	4
CITS F265—Directory Services Administration .....	3

- Pass a certification review requiring students to demonstrate proficiency in the following skill areas: network support and troubleshooting; system administration; cybersecurity; independent thinking; human relations and support; and professional practices.\*\*
- Minimum credits required .....

\* Students must earn a C- grade 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.

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  
 907-479-2436  
[www.ctc.uaf.edu/programs/inst/](http://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**

- Complete the general university requirements (page 93).
- 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
- \* Students must earn a C grade or better in each course.

## INTERDISCIPLINARY STUDIES

Office of Interdisciplinary Programs  
907-474-7716

[www.uaf.edu/gradsch/classes/interdisciplinary-program/](http://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/](http://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.
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  
907-479-2436

[www.ctc.uaf.edu/programs/protech/](http://www.ctc.uaf.edu/programs/protech/)

### Certificate

This program is presently suspended.

## NATIVE LANGUAGE EDUCATION

College of Liberal Arts  
Alaska Native Languages Program  
907-474-7874

[www.uaf.edu/anlc/classes/](http://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

#### Central Yup'ik Eskimo

- a. Demonstrate advanced oral/aural proficiency in Yup'ik.
- b. Complete the following program (major) requirements:
 

ESK F109—Central Yup'ik 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 Beginning 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—Central Yup'ik Orthography .....3
    - ESK F208—Yup'ik Composition .....3
    - ESK F250—Yup'ik Literature for Children.....3
    - ESK F251—Teaching Beginning 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 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/](http://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 help deliver legal services under the supervision of a

practicing lawyer, and provides continuing education and upgrading of skills for paralegals already employed. The program also 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 paralegal studies program does not train lawyers or legal administrators. The associate 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 Paralegal Studies.....3
  - PLS F105—Introduction to Paralegal Ethics.....2
  - PLS F201—Practical Paralegal Skills.....3
  - PLS F210—Civil Procedure.....3
  - PLS F260—Computers in the Law Office.....3
  - PLS F280—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) or JUST F110—Introduction to Justice (3) .....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
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 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.....3
  - PLS electives .....12
2. Minimum credits required .....15

## PARAMEDICINE

College of Rural and Community Development  
Community and Technical College  
907-455-2853  
[www.ctc.uaf.edu/programs/emergency/](http://www.ctc.uaf.edu/programs/emergency/)

### A.A.S. Degree

Minimum Requirements for Degree: 69-73 credits

The Community and Technical College paramedic program is accredited by the Commission on Accreditation of Allied Health Education Programs upon recommendation of the Committee on Accreditation of Education Programs for EMS Professions, 1361 Park St., Clearwater, FL 33756, 727-210-2350.

The emergency medical services program offers excellent instruction, clinical experience, state-of-the-art simulation labs and practical vocational experience for the student seeking to become a paramedic. Upon completion of the paramedicine program, students will be able to take the national paramedic exam. After receiving national certification, students can apply for a paramedic license through the Alaska State Medical Board.

An application must be completed for admission into the paramedicine program. Applications are reviewed by the program's medical director and advisory board.

Applicants must have a current EMT basic certification (or have completed EMS F170—Emergency Medical Technician I), and have completed HLTH F114—Fundamentals of Anatomy and Physiology.

### 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:\*
    - 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 F213X—Human Anatomy and Physiology I (4)  
and BIOL F214X—Human Anatomy and  
Physiology II (4) ..... 4-8
  4. Minimum credits required ..... 69-73
- \* Student must earn a C- grade or better in each course.

## PILOTING, PROFESSIONAL

College of Rural and Community Development  
Community and Technical College  
907-455-2851  
[www.ctc.uaf.edu/programs/pilot/](http://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 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  
907-479-2436  
[www.ctc.uaf.edu/programs/pgen/](http://www.ctc.uaf.edu/programs/pgen/)

### Certificate

**Admissions to this program are presently suspended.**

Minimum Requirements for Certificate: 37 credits

The power generation program will help students develop entry-level skills 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—Introduction 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 or better in each course.

**PROCESS TECHNOLOGY**

College of Rural and Community Development  
 Community and Technical College  
 907-479-2436  
[www.ctc.uaf.edu/programs/protech/](http://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 Troubleshooting.....3  
 PRT F255—Process Technology Quality .....1  
 Major elective credits\*\* .....9
5. Minimum credits required: .....63  
 \* Students must earn a C grade or better in each course.  
 \*\* Electives must be approved by the Process Technology Program advisor.

**RURAL HUMAN SERVICES**

College of Rural and Community Development  
 Chukchi Campus 907-442-3400  
 Interior Alaska Campus 907-474-5440  
 Kuskokwim Campus 907-543-4500  
 Northwest Campus 907-443-2201  
[www.uaf.edu/rhs/](http://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:  
 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 Recovery and Mental Illness.....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  
907-479-2436  
[www.ctc.uaf.edu/osh/](http://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).
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 .....

\* Students must earn a C grade or better in each course.

## TRIBAL MANAGEMENT

College of Rural and Community Development  
Interior Alaska Campus  
907-474-5710  
[www.uaf.edu/iac/programs/tribal-management/](http://www.uaf.edu/iac/programs/tribal-management/)

### Certificate; A.A.S. Degree

Minimum Requirements for Certificate: 30 credits;  
for A.A.S. Degree: 60 credits

The tribal management program teaches the job-related skills and knowledge needed for positions within tribal and local governments and other organizations in rural Alaska. In response to the broad variety of job-related skills needed by tribal councils, administrators and staff, the tribal management certificate and A.A.S. degree programs are designed to allow students to specialize their education to target specific employment related skills. Students perform specific tasks, learn basic management rationale and explore issues in tribal government. The tribal management program provides students with fundamental knowledge of tribal governance and finance as well as hands-on education and training in subject areas important to tribal governments. Students work closely with their academic advisor to choose courses that target their employment based needs and are

encouraged to specialize their education to a specific area of study, or take courses from multiple areas of study.

Students entering either the certificate or A.A.S. degree program will 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 program requirements:
 

TM F101—Introduction to Tribal Management.....	3
TM F105—Introduction to Tribal Finance Applications.....	3
TM F199—Tribal Management Practicum I.....	3
4. Complete 12 credits from the following courses. Students can specialize in one area of study or can choose from multiple areas of study. Course substitutions relevant to Tribal Management may be made with the approval of the Tribal Management faculty advisor.

#### Environmental and Natural Resource Management

BIOL F104X—Natural History of Alaska .....	4
ENVI F101—Introduction to Environmental Science.....	3
FISH F101—Introduction to Fisheries.....	3
NRM F101—Natural Resources Conservation and Policy.....	3
RD F265—Perspectives on Subsistence in Alaska.....	3
TM F120—Introduction to Tribal Natural Resource Management.....	3
TM F140—Introduction to Geospatial Data .....	1
TM F141—Practical GIS for Rural Alaska.....	2
TM F182—Introduction to NEPA for Rural Transportation.....	1

#### Community Health and Wellness

ANS F242—Native Cultures of Alaska .....	3
HUMS F101—Introduction to Human Services.....	3
HUMS F105—Personal Awareness and Growth .....	3
HUMS F260—History of Alcohol in Alaska.....	1
PSY F101—Introduction to Psychology .....	3
RHS F130—Process of Community Change.....	2
RHS F140—Alaska Native Values and Principles.....	1
RNS F101—Rural Nutrition and Health Change.....	1
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

#### Tribal Governance and Law

PS F100X—Political Economy.....	3
PS/NORS F205—Leadership, Citizenship and Choice.....	3
PS F263—Alaska Native Politics .....	3
RD F110—ANCSA: Land Claims in the 21st Century.....	1
TM F110—Tribal Court Development for Alaska Tribes .....	1
TM F111—Children’s Topics in Tribal Justice.....	1
TM F112—Federal Indian Law for Alaska Tribes.....	1
TM F114—Tribal Justice Responses to Community and Domestic Violence.....	1
TM F115—Tribal Court Administration .....	1
TM F250—Current Topics in Tribal Government .....	1

#### Community and Economic Development

ABUS F101—Principles of Accounting I.....	3
ABUS F151—Village Based Entrepreneurship .....	1-3
ABUS F158—Introduction to Tourism .....	1-3
ABUS F179—Fundamentals of Supervision.....	3
ABUS F235—Fund Accounting for Nonprofits .....	3
BA F151—Introduction to Business.....	3
CTT F104—Basic Communication and Employability Skills .....	2
ECON F100X—Political Economy.....	3
ECON F111—Economics of Rural Alaska .....	3
RD F250—Grant Writing for Community Development .....	1-3
TM F130—Introduction to Utility Management.....	2
TM F131—Organizational Management for Utilities.....	2
TM F134—Financial Management for Utilities.....	2

**Tribal Planning**

ABUS F179—Fundamentals of Supervision.....3  
 ABUS F272—Small-Business Planning .....3  
 CTT F240—Introduction to Project Development for Tribal Residential Construction .....3  
 RD F250—Grant Writing for Community Development .....3  
 RD F268—Rural Tourism: Planning and Principles ..... 1-3  
 TM F138—Planning for Utilities .....2  
 TM F271—Rural Transportation Planning.....1

**Tribal Transportation**

TM F170—Fundamentals of Rural Transportation .....3  
 TM F171—Introduction to Indian Reservations Road Program .....1  
 TM F172—Conducting a Transportation Inventory.....1  
 TM F173—Traffic Monitoring for Rural Transportation .....1  
 TM F174—Basics of a Good Gravel Road .....1  
 TM F182—Introduction to NEPA for Rural Transportation.....1  
 TM F271—Rural Transportation Planning.....1  
 TM F272—Finance Applications for Rural Transportation .....1  
 TM F273—Transportation Improvement Programs and Control Schedules.....1  
 TM F274—Road Inventory Field Data Systems .....1  
 TM F276—Project Management for Rural Transportation .....4

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 (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 27 credits from the following courses:
 

Students can specialize in one area of study or can choose from multiple areas of study. Course substitutions relevant to tribal management may be made with the approval of the tribal management faculty advisor.

**Environmental and Natural Resource Management**

BIOL F104X—Natural History of Alaska .....4  
 ENVI F101—Introduction to Environmental Science .....3  
 FISH F101—Introduction to Fisheries.....3  
 FISH F261—Introduction to Fisheries Utilization .....3  
 NRM F101—Natural Resources Conservation and Policy.....3  
 NRM F204—Public Lands Law and Policy .....3  
 RD F245—Fisheries Development in Rural Alaska .....3  
 RD F255—Rural Alaska Land Issues.....3  
 RD F265—Perspectives on Subsistence in Alaska.....3  
 RD F280—Resource Management Research Techniques.....3  
 TM F120—Introduction to Tribal Natural Resource Management.....3  
 TM F140—Introduction to Geospatial Data .....1  
 TM F141—Practical GIS for Rural Alaska.....2  
 TM F142—Practical GIS Project Design.....2  
 TM F182—Introduction to NEPA for Rural Transportation.....1  
 TM F225—Cross Connections: Adapting and Integrating Principles of Management and Conservation.....3

**Community Health and Wellness**

ANS F242—Native Cultures of Alaska .....3  
 ANS F330—Yup'ik Parenting and Development ..... 1-3  
 HUMS F105—Personal Awareness and Growth .....3  
 HUMS F120—Cultural Diversity in Human Services.....3  
 HUMS F205—Basic Principles of Group Counseling .....3  
 HUMS F260—History of Alcohol in Alaska.....1  
 HUMS F265—Substance Abuse and the Family ..... 1-2  
 PSY F101—Introduction to Psychology .....3

RHS F130—Process of Community Change.....2  
 RHS F140—Alaska Native Values and Principles.....1  
 RHS F150—Introduction to Rural Counseling .....2  
 RHS F275—Introduction to Recovery and Mental Illness.....2  
 RHS F280—Case Management .....2  
 RNS F101—Rural Nutrition and Health Change.....1  
 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  
 SWK F103—Introduction to Social Work .....3  
 SWK F220—Ethics, Values and Social Work Practice.....3  
 SWK F320W—Rural Social Work.....3

**Tribal Governance and Law**

ANS F310—Indigenous Land Settlements.....3  
 ANS F325—Native Self Government.....3  
 PS F100X—Political Economy .....3  
 PS/NORS F205—Leadership, Citizenship and Choice .....3  
 PS F212—Introduction to Public Administration .....3  
 PS F263—Alaska Native Politics .....3  
 RD F110—ANCSA: Land Claims in the 21st Century .....1  
 RD F265—Perspectives on Subsistence in Alaska.....3  
 TM F110—Tribal Court Development for Alaska Tribes .....1  
 TM F111—Children's Topics in Tribal Justice.....1  
 TM F112—Federal Indian Law for Alaska Tribes.....1  
 TM F113—Tribal Code Development.....1  
 TM F114—Tribal Justice Responses to Community and Domestic Violence.....1  
 TM F115—Tribal Court Administration .....1  
 TM F116—Juvenile Justice in Tribal Court .....1  
 TM F117—Tribal Court Enforcement of Decisions.....1  
 TM F118—Tribal Community and Restorative Justice.....1  
 TM F250—Current Topics in Tribal Government .....1

**Community and Economic Development**

ABUS F101—Principles of Accounting I.....3  
 ABUS F151—Village Based Entrepreneurship ..... 1-3  
 ABUS F158—Introduction to Tourism ..... 1-3  
 ABUS F161—Personal and Business Finance .....3  
 ABUS F179—Fundamentals of Supervision.....3  
 ABUS F235—Fund Accounting for Nonprofits .....3  
 ABUS F263—Public Relations.....3  
 BA F151—Introduction to Business.....3  
 CTT F104—Basic Communication and Employability Skills .....2  
 ECON F100X—Political Economy.....3  
 ECON F111—Economics of Rural Alaska .....3  
 RD F110—ANCSA: Land Claims in the 21st Century .....1  
 RD F250—Grant Writing for Community Development ..... 1-3  
 TM F130—Introduction to Utility Management.....2  
 TM F131—Organizational Management for Utilities.....2  
 TM F134—Financial Management for Utilities.....2  
 TM F136—Personnel Management for Utilities.....2

**Tribal Planning**

ABUS F179—Fundamentals of Supervision.....3  
 ABUS F272—Small-Business Planning .....3  
 CTT F240—Introduction to Project Development for Tribal Residential Construction .....3  
 RD F250—Grant Writing for Community Development .....3  
 RD F268—Rural Tourism: Planning and Principles ..... 1-3  
 RD F351—Strategic Planning for Rural Communities.....3  
 TM F138—Planning for Utilities .....2  
 TM F271—Rural Transportation Planning.....1

**Tribal Transportation**

TM F170—Fundamentals of Rural Transportation .....3  
 TM F171—Introduction to Indian Reservations Road Program .....1  
 TM F172—Conducting a Transportation Inventory.....1  
 TM F173—Traffic Monitoring for Rural Transportation .....1

TM F174—Basics of a Good Gravel Road .....	1
TM F182—Introduction to NEPA for Rural Transportation.....	1
TM F271—Rural Transportation Planning.....	1
TM F272—Finance Applications for Rural Transportation .....	1
TM F273—Transportation Improvement Programs and Control Schedules .....	1
TM F274—Road Inventory Field Data Systems .....	1
TM F276—Project Management for Rural Transportation .....	4
5. Minimum credits required .....	60

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 or better in each course.	

## YUP'IK LANGUAGE PROFICIENCY

College of Liberal Arts  
Alaska Native Languages Program 907-474-7874  
Kuskokwim Campus 907-543-4500  
[www.uaf.edu/anlc/classes/](http://www.uaf.edu/anlc/classes/)

### 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

- Complete the general university requirements (page 93).
- 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.)
- Complete the following:
  - ESK F208—Yup'ik Composition .....
  - ESK F130—Beginning Yup'ik Grammar .....
  - ESK F240—Introduction to Reading Yup'ik.....
- Complete one of the following sequences:
  - ESK F121—Elementary Central Yup'ik Apprenticeship I.....
  - ESK F122—Elementary Central Yup'ik Apprenticeship II .....
  - ESK F123—Elementary Central Yup'ik Apprenticeship III.....
  - or
  - ESK F103—Conversational Central Yup'ik.....
  - ESK F104—Conversational Central Yup'ik.....
  - ESK F203—Intermediate Central Yup'ik.....
  - ESK F204—Intermediate Central Yup'ik.....
- Complete one of the following sequences:
  - ESK F221—Intermediate Central Yup'ik Apprenticeship I .....
  - ESK F222—Intermediate Central Yup'ik Apprenticeship II.....
  - ESK F223—Intermediate Central Yup'ik Apprenticeship III.....
  - or
  - ESK F205—Regaining Fluency in Yup'ik .....
  - ESK F206—Regaining Fluency in Yup'ik .....
  - ESK F223—Intermediate Central Yup'ik Apprenticeship III.....
- Minimum credits required .....

#### Major — A.A.S. Degree

- Complete the general university requirements (page 93).
- Complete the A.A.S. degree requirements (page 97).
- Complete the following program (major) requirements:\*
  - Complete the following:
    - ESK F208—Yup'ik Composition .....
    - ESK F130—Beginning Yup'ik Grammar .....
    - ESK F240—Introduction to Reading Yup'ik.....



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Art major Joel Isaak, center, gets some help filling a mold with molten bronze in the UAF Fine Arts Complex as part of the process of creating a life-sized sculpture for his senior thesis.

# 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 134–135.

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 must earn at least 120 semester credits, including transfer credits, at the 100-level or above. 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 C- grade or higher in all courses required for your degree, unless otherwise specified by your major (major, minor, core and degree requirements).

Unless otherwise specified, 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.

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 page 37.)

### 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. Nondegree 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

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- in courses required for major. Some majors require higher GPAs for major course work.
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

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 are permitted with departmental approval.

### MINORS

A minor is a component of a bachelor's degree. The Bachelor of Arts and Bachelor of Arts and Sciences degrees require a minor. You must satisfactorily complete the requirements for a minor before a B.A. or B.A.S. degree can be awarded. A minor is optional for Bachelor of Science, Bachelor of Business Administration, and Bachelor of Emergency Management 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 2.0 (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 nonresident 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 student for a bachelor's degree. You're considered enrolled in your degree program when you complete the appropriate degree student registration procedure. If you do not enroll for a semester or more, or if you enroll through the nondegree 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

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 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 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 BAs) 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.

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 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. (See Information Release and FERPA on page 50.)

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.

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 MBA. 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 prepares students for professional careers responding to natural and manmade disasters, forming crisis management plans and ensuring public safety. Students with backgrounds ranging from first responders and military to applied vocational skills will graduate ready to start or advance in careers in emergency management, homeland security, public safety and emergency services.

- **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 and Communication F141X 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 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. Students must earn a C- grade or higher in each course used toward the baccalaureate core.

Requirements	Credits
<b>Communication</b>	<b>9</b>
ENGL F111X—Introduction to Academic Writing (3).	
Complete one of the following:	
<ul style="list-style-type: none"> <li>ENGL F211X—Academic Writing about Literature (3)</li> <li>ENGL F213X—Academic Writing about the Social and Natural Sciences (3)</li> </ul>	
Complete one of the following:	
<ul style="list-style-type: none"> <li>COMM F121X—Introduction to Interpersonal Communication (3)</li> <li>COMM F131X—Fundamentals of Oral Communication: Group Context (3)</li> <li>COMM F141X—Fundamentals of Oral Communication: Public Context (3)</li> </ul>	
<b>Perspectives on the Human Condition</b>	<b>18</b>
Complete all of the following four courses:	
<ul style="list-style-type: none"> <li>ANTH F100X/SOC F100X—Individual, Society and Culture (3)</li> <li>ECON F100X or PS F100X—Political Economy (3)</li> <li>HIST F100X—Modern World History (3)</li> <li>ENGL/FL F200X—World Literature (3)</li> </ul>	
Complete one of the following three courses:	
<ul style="list-style-type: none"> <li>ART/MUS/THR F200X—Aesthetic Appreciation: Interrelationship of Art, Drama and Music (3)</li> <li>HUM F201X—Unity in the Arts (3)</li> <li>ANS F202X—Aesthetic Appreciation of Alaska Native Performance (3)</li> </ul>	
Complete one of the following six courses:	
<ul style="list-style-type: none"> <li>BA F323X—Business Ethics (3)</li> <li>COMM F300X—Communicating Ethics (3)</li> <li>JUST F300X—Ethics and Justice (3)</li> <li>NRM F303X—Environmental Ethics and Actions (3)</li> <li>PS F300X—Ethics and Society (3)</li> <li>PHIL F322X—Ethics (3)</li> </ul>	
Or complete 12 credits from the above courses plus one of the following:	
<ul style="list-style-type: none"> <li>Two semester-length courses in a single Alaska Native language or other non-English language</li> <li>Three semester-length courses (9 credits) in American Sign Language taken at the university level.</li> </ul>	

Mathematics	3
Complete one of the following:	
<ul style="list-style-type: none"> <li>MATH F113X—Concepts and Contemporary Applications of Mathematics (3)</li> <li>MATH F151X—College Algebra for Calculus* (4)</li> <li>MATH F152X—Trigonometry (3)</li> <li>MATH F156X—Precalculus (4)</li> <li>MATH F122X—Algebra for Business and Economics** (3)</li> <li>STAT F200X—Elementary Probability and Statistics (3)</li> </ul>	
*No credit may be earned for more than one of MATH F151X or F122X.	
Or complete one of the following:*	
<ul style="list-style-type: none"> <li>MATH F251X—Calculus I** (4)</li> <li>MATH F252X—Calculus II (4)</li> <li>MATH F253X—Calculus III (4)</li> <li>MATH F222X—Calculus for Business and Economics (4)</li> <li>MATH F232X—Calculus for Life Sciences (4)</li> </ul>	
*Or any math course having one of these as a prerequisite	
**No credit may be earned for more than one of MATH F251X, F222X or F232X.	
<b>Natural Sciences</b>	<b>8</b>
Complete any two (4-credit) courses.	
<ul style="list-style-type: none"> <li>ATM F101X—Weather and Climate of Alaska (4)</li> <li>BIOL F100X—Human Biology (4)</li> <li>BIOL F101X—Introduction to Animal Behavior (4)</li> <li>BIOL F103X—Biology and Society (4)</li> <li>BIOL F104X—Natural History (4)</li> <li>BIOL F115X—Fundamentals of Biology I (4)</li> <li>BIOL F116X—Fundamentals of Biology II (4)</li> <li>BIOL F120X—Introduction to Human Nutrition (4)</li> <li>BIOL F213X—Human Anatomy and Physiology I (4)</li> <li>BIOL F214X—Human Anatomy and Physiology II (4)</li> <li>CHEM F100X—Chemistry in Complex Systems (4)</li> <li>CHEM F103X—Basic General Chemistry (4)</li> <li>CHEM F104X—Beginnings in Biochemistry (4)</li> <li>CHEM F105X—General Chemistry (4)</li> <li>CHEM F106X—General Chemistry (4)</li> <li>GEOG F111X—Earth and Environment: Elements of Physical Geography (4)</li> <li>GEOS F100X—Introduction to Earth Science (4)</li> <li>GEOS F101X—The Dynamic Earth (4)</li> <li>GEOS F106X—Life and the Age of Dinosaurs (4)</li> <li>GEOS F112X—History of Earth and Life (4)</li> <li>GEOS F120X—Glaciers, Earthquakes and Volcanoes (4)</li> <li>GEOS F125X—Humans, Earth and Environment (4)</li> <li>MSL F111X—The Oceans (4)</li> <li>PHYS F102X—Energy and Society (4)</li> <li>PHYS F103X—College Physics (4)</li> <li>PHYS F104X—College Physics (4)</li> <li>PHYS F115X—Physical Science I (4)</li> <li>PHYS F175X—Astronomy (4)</li> <li>PHYS F211X—General Physics (4)</li> <li>PHYS F212X—General Physics (4)</li> <li>PHYS F213X—Elementary Modern Physics (4)</li> </ul>	
<b>Library and Information Research</b>	<b>0-1</b>
Successful completion of library skills competency test or LS F100X or LS F101X prior to junior standing	
<b>Upper-Division Writing and Oral Communication</b>	<b>0-1</b>
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

## Beyond the Core

### BACHELOR OF ARTS

Requirements	Credits
Complete the baccalaureate core	38-39
<b>Complete the following B.A. requirements in addition to the core:</b>	
Humanities and social sciences	18
• 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.	
Mathematics	3
• One course at the F100-level or above in mathematical sciences (math, computer science, statistics) excluding developmental math (DEVM) courses.	
Complete one of the following:	
• Minor complex*	at least 15
• Foreign/Alaska Native language/American Sign Language option	12-18
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)	
Major complex*	at least 30
Electives	12-19
<b>Minimum credits required for degree</b>	<b>120*</b>

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 may be used to fulfill the B.A. degree requirements in humanities, social sciences or mathematics. Courses used to fulfill requirements for a minor 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
<b>Complete the following B.S. requirements in addition to the core:</b>	
Natural sciences	8
• 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.	
Mathematics	3
• 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 (excluding developmental math DEVM courses).	
Major complex*	at least 30
Minor complex (optional)*	15 or more
Electives	25-40
<b>Minimum credits required for degree</b>	<b>120*</b>

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 may be used to fulfill the B.S. degree requirements in mathematics or natural science. Courses used to fulfill requirements for a minor 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 be the same as the catalog used for the major and general degree requirements.

- 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 higher in all common body of knowledge courses, department-specific general requirements, major-specific requirements, and specific math and statistics requirements.

Requirements	Credits
<b>Complete the baccalaureate core</b>	<b>39 –40</b>
(BA F323X—Business Ethics must be included in the courses used to meet the Perspectives on the Human Condition requirement.)	
<b>Complete the following B.B.A. requirements in addition to the core:</b>	
Mathematics	
• MATH F122X—Algebra for Business and Economics (MATH F222X should be taken to complete the mathematics requirement for the core.)	3
Social Sciences and Statistics	9
• ECON F201—Principles of Economics I: Microeconomics (3)	
• ECON F202—Principles of Economics II: Macroeconomics (3)	
• ECON F227—Intermediate Statistics for Economics and Business (3)	
Common Body of Knowledge	34-37
• AIS F101—Effective Personal Computer Use OR demonstrated computer literacy (0-3)	
• ACCT F261—Principles of Financial Accounting (3)	
• ACCT F262—Principles of Managerial Accounting (3)	
• 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)	
• HSEM F445 W, O/2—Business Continuity and Crisis Management(3)	
Major complex*	at least 24-33
Minor complex (optional) **	at least 15
<b>Minimum credits required for degree</b>	<b>120</b>

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 prepares students for professional careers responding to natural and manmade disasters, forming crisis management plans and ensuring public safety. Students with backgrounds ranging from first responders and military to applied vocational skills graduate ready to start or advance in careers in emergency management, homeland security, public safety and emergency services. See Homeland Security and Emergency Management in the Bachelor's Degree Programs section.

### 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.

TABLE 21 **SUMMARY OF BACHELOR'S DEGREE REQUIREMENTS**

	<b>To be completed by all. See your degree requirements (e.g. B.B.A.) for any specific required core courses:</b>		
<b>Academic Discipline</b>	<b>Baccalaureate Core</b>		<b>Bachelor of Arts and Bachelor of Fine Arts*</b>
<b>Communications</b>	ENGL F111X—3 cr ENGL F211X or ENGL F213—3 cr COMM F121X or COMM F131X or COMM F141X—3 cr  See individual degree programs for the writing and oral-intensive core requirements		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
<b>Humanities and Social Sciences</b>	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
<b>Mathematics</b>	MATH F113X or MATH F151X or MATH F152X or MATH F156X or MATH F122X or STAT F200X or MATH F251X, F252X, F253X, F222X or F232X 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 (excluding DEVM courses)
<b>Natural Sciences</b>	Complete any two (4-credit) courses. ATM F101X—4 cr BIOL F100X—4 cr BIOL F101X—4 cr BIOL F103X—4 cr BIOL F104X—4 cr BIOL F115X—4 cr BIOL F116X—4 cr BIOL F120X—4 cr BIOL F213X—4 cr BIOL F214X—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 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
<b>Library and Information Research</b>	Successful completion of library skills competency test or LS F100X or F101X—0-1 cr (complete during first 2 years)		
<b>Other</b>	Students must earn a C- or higher in courses used toward the baccalaureate core requirements.		*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.
<b>Major Complex</b>			At least 30 cr
<b>Minor Complex</b>			Required: at least 15 cr*
<b>Total Required</b>	38-40 cr		120 cr

**Complete the following degree requirements (with a minimum grade of C- in all courses)**

<b>Bachelor of Emergency Management</b>	<b>Bachelor of Science</b>	<b>Bachelor of Technology</b>	<b>Bachelor of Business Administration</b>	<b>Bachelor of Music</b>	<b>Bachelor of Arts and Sciences</b>
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	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	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 F410 W,O/2, ED F486 W,O and HIST F461 W
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.)
	One 3-credit course at the F100 level or above from math, computer sciences or statistics (excluding DEVM courses). 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 F122X must be taken to meet the core math requirement)	MATH F122X—3 cr (MATH F222X must be taken to meet the core math requirement.)		MATH F211—3 cr MATH F212—3 cr (MATH F151X or MATH F122X 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—3 cr Area of specialization—30+ cr Option—33 cr	Common Body of Knowledge—34-37 cr		Electives—at least 7 cr
At least 78 cr	At least 30 cr		At least 24-33 cr	85 or more cr	At least 56 cr
Optional: at least 15 cr	Optional: at least 15 cr		Optional: at least 15 cr		At least 15 cr
120 cr	120 cr	120 cr	120 cr	120 cr	120 cr

# Bachelor's Degree Programs

## ACCOUNTING

School of Management  
 Department of Accounting and Information Systems  
 907-474-7461  
[www.uaf.edu/som/degrees/undergraduate/acct/](http://www.uaf.edu/som/degrees/undergraduate/acct/)

### B.B.A. Degree

Minimum Requirements for Degree: 120 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 127. As part of the core curriculum requirements, complete: BA F323X\* and MATH F222X\*.)
2. Complete the B.B.A. degree requirements. (See page 133. As part of the common body of knowledge, complete AIS F316.)
3. Complete one of the following\*: ENGL F314W,O/2 or BA F456W
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 F401—Advanced Accounting.....	3
ACCT F452W—Auditing (3) or ACCT F472W—Internal and Government Auditing (3).....	3
5. Complete three of the following:\*
 

ACCT F404—Advanced Cost Accounting and Controllershship .....	3
ACCT F414O/2—Governmental and Nonprofit Accounting.....	3
ACCT F430—Advanced Taxes .....	3
ACCT F472W—Internal and Government Auditing.....	3
6. Complete free electives as needed to meet 120 credits
7. Minimum credits required .....120

\* Students must earn a C- grade 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.

### Minor

1. Complete the following:\*
 

ACCT F261—Principles of Financial Accounting.....	3
ACCT F262—Principles of Managerial Accounting.....	3
Upper-division accounting electives .....	9
2. Minimum credits required .....15

\* Students must earn a C- grade or better in each course.

Note: Courses completed to satisfy this minor can be used to simultaneously satisfy other major or general distribution requirements.

## AEROSPACE ENGINEERING

College of Engineering and Mines  
 907-474-6098  
[www.uaf.edu/cem/](http://www.uaf.edu/cem/)

### Minor only

#### Minor

1. Complete the following:
 

ME F451—Aerodynamics.....	3
ME F452—Introduction to Astroynamics .....	3
2. Complete three of the following:
 

EE F434—Instrumentation Systems.....	4
EE F444—Embedded Systems Design.....	4
EE F471—Fundamentals of Automatic Control (3) or ME F409—Controls (3) .....	3
GEOS F422—Geoscience Applications of Remote Sensing .....	3
ME F408—Mechanical Vibrations .....	3
ME F450— Theory of Flight .....	3
ME F453—Propulsion .....	3
3. Minimum credits required .....15

\* Students must earn a C- or better in each course.

Note: This minor may require substantial prerequisite courses for non-ME and non-EE majors, which should be taken into consideration.

## ALASKA NATIVE LANGUAGES

College of Liberal Arts  
 Alaska Native Languages Program  
 907-474-7874  
[www.uaf.edu/anlc/](http://www.uaf.edu/anlc/)

### Minor only

The Alaska Native languages 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 Athabaskan. Individual or small-group instruction is available in other Athabaskan 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 Athabaskan 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 Athabaskan 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

## ALASKA NATIVE STUDIES

College of Rural and Community Development  
Department of Alaska Native Studies and Rural Development  
907-474-5405  
[www.uaf.edu/danrd/](http://www.uaf.edu/danrd/)

### B.A. Degree

Minimum Requirements for Degree: 120 credits

Alaska Native studies provides 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 North American society. The B.A. degree can be earned on the Fairbanks campus or through distance delivery.

Students complete a concentration in one of four areas: Alaska Native Forms of Cultural Expression, Alaska Native Education, Alaska Native Language, Alaska Native Law, or Government and Politics.

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.

Students applying for acceptance into the Alaska Native Studies program need to complete two department-specific requirements in addition to general university admission: an oral interview with faculty and a written questionnaire. Findings from this process will be used to support the department advising process and assist students in connecting with faculty and mentors. The questionnaire and instructions for the oral interview are on the DANSRD website under "How to Apply."

Special application requirements and deadlines apply for distance B.A. programs. For more information contact the department toll-free at 800-770-9531 or visit [www.uaf.edu/danrd/](http://www.uaf.edu/danrd/).

### Major — B.A. Degree

1. Complete the general university requirements (page 127).
2. Complete the B.A. degree requirements (page 132), including 39 credits of upper division credits. Non-Fairbanks campus students choosing a minor other than Rural Development must verify that the required courses can be accessed via distance before declaring that minor. Courses used in the core major and concentration area may be double counted for the minor.
3. Complete the following:\*  
ANS F101—Introduction to Alaska Native Studies.....3  
ANS/ANTH F242—Native Cultures of Alaska.....3  
ANS F310—Indigenous Land Settlements.....3  
ANS F350W,O—Cross Cultural Communication: Alaskan Perspectives .....3  
ANS F375—Native American Religion and Philosophy.....3  
ANS F401—Cultural Knowledge of Native Elders .....3  
RD F350—Community Research in Indigenous Contexts.....3  
ANS F478W—Alaska Native Studies Senior Thesis .....3
4. Complete 9 ANS/RD/TM elective credits.....9

5. Complete 21 credits in one of the following concentrations (These are recommended courses. Course substitutions may be made with approval of the faculty advisor):\*

#### Alaska Native Education

ANL F315—Alaska Native Languages: Eskimo-Aleut.....	3
ANL F316—Alaska Native Languages: Indian Languages.....	3
ANS F102—Orientation to Alaska Native Education.....	2
ANS F111—History of Alaska Natives .....	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/ANTH F320W—Language and Culture: Application to Alaska .....	3
ANS/ENGL F340—Contemporary Native American Literature .....	3
ANS F348W—Native North American Women.....	3
ANS F351—Practicum in Native Cultural Expression .....	1-3
ANS F370—Issues in Alaska Bilingual and Multicultural Education.....	1
ANS/ED F420—Alaska Native Education.....	3
ANS F461—Native Ways of Knowing .....	3
ANS F475—Alaska Native Social Change .....	3
RD F110—ANCSA: Land Claims in the 21st Century.....	1
RD F265—Perspectives on Subsistence in Alaska.....	3
RD F470/F670—ANCSA Pre-1971 to present .....	3

#### Alaska Native Forms of Cultural Expression

ANL F315—Alaska Native Languages: Eskimo-Aleut.....	3
ANL F316—Alaska Native Languages: Indian Languages.....	3
ANS F111—History of Alaska Natives .....	3
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/ANTH F320W—Language and Culture: Application to Alaska .....	3
ANS/ENGL F340—Contemporary Native American Literature .....	3
ANS F347—Voices of Native American Peoples.....	3
ANS F348W—Native North American Women.....	3
ANS/ENGL F349—Narrative Art of Alaska Native Peoples (in English translation) .....	3
ANS F351—Practicum in Native Cultural Expression .....	1-3
ANS F360—Advanced Native Dance .....	1
ANS F361—Advanced Alaska Native Performance.....	3
ANS/ART F365—Native Art of Alaska .....	3
ANS F381W—Alaska Natives in Film .....	3
ANS F461—Native Ways of Knowing .....	3
RD F265—Perspectives on Subsistence in Alaska.....	3
RD F470/F670—ANCSA Pre-1971 to present .....	3

#### Alaska Native Language (not available at all campus locations)

Complete two years study of an Alaska Native language (16 credits) and choose 6 credits from the following:\*

ANL F255—Introduction to Alaska Native Languages: Eskimo-Aleut .....	3
ANL F256—Introduction to Alaska Native Languages: Indian Languages .....	3
ANL F287—Teaching Methods for Alaska Native Languages.....	3
ANL F288—Curriculum and Materials Development for Alaska Native Languages .....	3
ANL F315—Alaska Native Languages: Eskimo-Aleut.....	3
ANL F316—Alaska Native Languages: Indian Languages.....	3
ANS F202X—Aesthetic Appreciation of Alaska Native Performance**.....	3

ANS F300W—Alaska Native Writers Workshop.....3  
 ANS/ANTH F320W—Language and Culture:  
 Application to Alaska .....3  
 ANS F370—Issues in Bilingual and Multicultural Education.....3  
 ANS F461—Native Ways of Knowing .....3

**Alaska Native Law, Government and Politics**

ANS F111—History of Alaska Natives .....3  
 ANS F250—Current Alaska Native Leadership Perspectives.....3  
 ANS/RD F315—Tribal Peoples and Development.....3  
 ANS/ANTH F320W—Language and Culture:  
 Application to Alaska .....3  
 ANS/PS F325—Native Self-Government.....3  
 ANS F348W—Native North American Women .....3  
 ANS/PS F425—Federal Indian Law and Alaska Natives.....3  
 ANS/PS F450—Comparative Aboriginal Rights and Policies.....3  
 ANS F475—Alaska Native Social Change .....3  
 ANS F461—Native Ways of Knowing .....3  
 ENGL F414W—Research Writing.....3  
 PLS F280—Legal Research and Writing for Paralegals.....3  
 PS F263—Alaska Native Politics .....3  
 RD F110—ANCSA: Land Claims in the 21st Century .....1  
 RD F265—Perspectives on Subsistence in Alaska.....3  
 RD F300—Rural Development in a Global Perspective .....3  
 RD F470/670—ANCSA Pre-1971 to present.....3  
 TM F201—Advanced Tribal Government .....3

6. Minimum credits required .....120  
 \* Students must earn a C- grade or better in each course.  
 \*\* ANS F202X may not be counted toward an Alaska Native Studies major if used to fulfill core requirements.

**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 Alaska Native Studies and Rural Development department head.

**AMERICAN SIGN LANGUAGE**

College of Rural and Community Development  
 Community and Technical College  
 907-455-2808  
[www.ctc.uaf.edu](http://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. ASL is a visual language that uses physical stamina and coordination, as well as agile visual/mental processing and prolonged visual attention. There is no use of voice during the ASLG classes, therefore students must be able to sustain physically demanding activity in order to participate and learn.

**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  
 ASLG F205—American Sign Language V .....3  
 2. Minimum credits required .....15  
 \* Students must earn a C- grade or better in each course.  
 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/](http://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 127. As part of the core curriculum requirements complete ANTH F100X\*.)  
 2. Complete the B.A. degree requirements (page 132).  
 3. Complete the following program (major) requirements:\*
- a. Complete the following:  
 ANTH F211—Fundamentals of Archaeology (3)  
 or ANTH F221—Fundamentals of Biological Anthropology (3).....3  
 ANTH F215—Fundamentals of Social/Cultural Anthropology.....3  
 ANTH/LING F223—Sociolinguistics: Language and Inequality.....3  
 ANTH F384—History of Anthropology.....3  
 ANTH F4110—Senior Seminar.....3  
 b. Complete six anthropology electives, at least four (12 credits) of which are at the F400 level .....18  
 4. Minimum credits required .....120  
 \* Students must earn a C- grade 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 127. As part of the core curriculum requirements complete ANTH F100X\*.)  
 2. Complete the B.S. degree requirements (page 132).  
 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 ANTH/LING F223—Sociolinguistics: Language and Inequality (3) .....3  
 ANTH F4110—Senior Seminar.....3

- b. Complete the following:
    - ANTH F214—World Prehistory.....3
    - ANTH F405W—Archaeological Methods and Theory .....3
    - ANTH F423—Human Origins.....3
    - ANTH F424—Analytical Techniques.....3
  - c. Complete one of the following:
    - ANTH F309—Circumpolar Archaeology .....3
    - ANTH F315—Human Variation.....3
  - d. Complete one of the following:
    - ANTH F415—Zooarchaeology and Taphonomy.....3
    - ANTH F422—Human Osteology .....4
  - e. Complete at least two 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 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/LING F223—Sociolinguistics: Language and Inequality.....3
  - Anthropology electives.....6
- 2. Minimum credits required .....18

**ARCTIC SKILLS**

College of Rural and Community Development  
 Department of Emergency Services and Public Safety  
 907-455-2895  
[www.uaf.edu/rural/](http://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.

**ART**

College of Liberal Arts  
 Department of Art  
 907-474-7530  
[www.uaf.edu/art/](http://www.uaf.edu/art/)

**B.A., B.F.A. Degrees**

Minimum Requirements for Degrees: B.A.: 120 credits;  
 B.F.A.: 120 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 127).
- 2. Complete the B.A. degree requirements (page 132).
- 3. Complete the following program (major) requirements:\*
  - a. Complete the following:
    - ART F105—Beginning Drawing.....3
    - ART F261 and F262—History of World Art .....6
  - b. Complete two of the following:
    - ART F161—Two-Dimensional Digital Design .....3
    - ART F162—Color and Design .....3
    - ART F163—Three-Dimensional Design.....3
  - c. Complete three of the following electives (at least one must be a two-dimensional area, and one must be a three-dimensional area):
    - Two-dimensional areas:
      - ART F205—Intermediate Drawing .....3
      - ART F207—Beginning Printmaking.....3
      - ART F213—Beginning Painting (Acrylic or Oil) .....3
      - ART F271—Beginning Computer Art .....3
      - ART F283—Basic Darkroom Photography (3)  
 or ART F284—Basic Digital Photography (3).....3
    - Three-dimensional areas:
      - ART F201—Beginning Ceramics.....3
      - ART F209—Beginning Metalsmithing and Jewelry .....3
      - ART F211—Beginning Sculpture.....3
      - ART F268—Beginning Native Art Studio.....3
  - d. Complete three upper-division courses from one of these areas:
    - Ceramics .....9
    - Computer Art.....9
    - Drawing .....9
    - Metalsmithing.....9
    - Native Studio Art.....9
    - Painting.....9
    - Photography .....9
    - Printmaking .....9
    - Sculpture.....9
  - e. Complete one of the following upper-division art history courses:
    - ART F363W—History of Modern Art.....3
    - ART F364W—Italian Renaissance Art .....3
    - ART F365W—Native Art of Alaska.....3
    - ART F425W—Visual Images of the North .....3
    - ART F463—Seminar in Art History .....3
    - ART F490—Current Problems.....3
  - f. Upper-division art elective.....3

- 4. Minimum art credits required for major .....39
- 5. Minimum credits required .....120
- \* *Students must earn a C- grade or better in each course.*
- Note: Transfer students who are candidates for the B.A. degree in art must complete a minimum of 12 credits in art while in residence.*
- Note: In addition to the program (major) requirements above, B.A. students will need additional upper-division credit (e.g., from the social science/humanities requirements and the minor), to equal 39 upper-division credits total.*

**Major — B.F.A. Degree**

**Concentrations: Ceramics, Computer Art, Drawing, Metalsmithing, Native Studio Art, Painting, Photography, Printmaking, Sculpture**

- 1. Complete the general university requirements (page 127).
- 2. Complete the B.F.A. degree requirements (page 133).
- 3. Complete the following program (major) requirements:\*
  - a. Complete the following:
    - ART F105—Beginning Drawing .....3
    - ART F261 and F262—History of World Art .....6
  - b. Complete two of the following:
    - ART F161—Two-Dimensional Digital Design .....3
    - ART F162—Color and Design .....3
    - ART F163—Three-Dimensional Design.....3
  - c. Complete three of the following electives (at least one must be a two-dimensional area, and one must be a three-dimensional area)
    - Two-dimensional areas:
      - ART F205—Intermediate Drawing .....3
      - ART F207—Beginning Printmaking.....3
      - ART F213—Beginning Painting (Acrylic or Oils).....3
      - ART F271—Beginning Computer Art .....3
      - ART F283—Basic Darkroom Photography (3) or ART F284—Basic Digital Photography (3).....3
    - Three-dimensional areas:
      - ART F201—Beginning Ceramics.....3
      - ART F209—Beginning Metalsmithing and Jewelry .....3
      - ART F211—Beginning Sculpture.....3
      - ART F268—Beginning Native Art Studio.....3
  - d. Major program approved by B.F.A. thesis committee\*\*\* .....24
  - e. Complete three of the following upper division art history courses:
    - ART F363W—History of Modern Art.....3
    - ART F364W—Italian Renaissance Art .....3
    - ART F365W—Native Art of Alaska.....3
    - ART F425W—Visual Images of the North .....3
    - ART F463—Seminar in Art History .....3
    - ART F490—Current Problems.....3
- Upper-division art electives.....6
- Thesis project (including exhibition, portfolio and oral presentation) .....3
- 4. Minimum credits required .....120
- \* *Students must earn a C- grade or better in each course.*
- \*\*\* *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.*

**Minor**

- 1. Complete the following:\*
  - ART F105—Beginning Drawing .....3
  - ART F261—History of World Art or F262 History of World Art .....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 the following:\*
  - Art Electives .....9
- 4. Minimum credits required .....18
- \* *Students must earn a C- grade or better in each course.*
- Note: A minor in art is only available to nonart majors.*

**ARTS AND SCIENCES**

School of Education  
907-474-7341  
[www.uaf.edu/educ/](http://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 127. As part of the core curriculum requirements, complete the following: ART/MUS/THR F200X\*, HIST F100X\*, ANTH/SOC F100X\*, ENG/FL F200X\*, MATH F122X\* or MATH F151X\*, 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 F211—Mathematics for Elementary School Teachers I .....3
    - MATH F212—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 Nonfiction 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 F486W,O—Media Literacy.....3	
i. Complete the following technology requirement: ED F237—Technology Tools for Teachers..... 0.5-2 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 <i>Students must earn a C- grade or better in each course.</i>	

\* 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/](http://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 Anthropology ANTH F302—Siberia: Past, Present, Future.....3	
b. 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	

JPN F201—Intermediate Japanese I.....4	
JPN F202—Intermediate Japanese II.....4	
c. Department of Geography GEOG F311W—Geography of Asia .....3	
d. 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	
e. Department of Philosophy PHIL F202—Introduction to Eastern Philosophy .....3	
f. Department of Political Science PS F203—Peace, War and Security.....3 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](http://www.bw.uaf.edu)

### B.A., B.S. Degrees

Minimum Requirements for Degrees: 120 credits

Biological sciences is an appropriate major for students interested in the science of life. Programs in these fields provide a broad education and a foundation in the principles of biology. Graduates are employed in environmental science, health services, biology education, and as field and laboratory technicians. Graduates also pursue advanced M.S., pharmacology, nursing, MD or Ph.D. degrees. Biology faculty advisors can help students choose courses that will best fit their goals.

Biological sciences majors may pursue either a B.A. or B.S. degree. Because biology is an interdisciplinary science, both programs include course work in the physical sciences and mathematics. The B.A. requires fewer credits in natural science and more credits in the social sciences and humanities than the B.S. degree, which focuses more intensively on biological science. The B.S. degree without a concentration provides the most comprehensive education in biology. The B.S. degree with a concentration permits some degree of specialization in one of three sub-disciplines: cell and molecular biology, physiology, or ecology and evolutionary biology.

Incoming students who do not meet the prerequisites for Fundamentals of Biology I (BIOL F115X) and those who did not complete a biology course in high school are encouraged to take a biology course for non-majors such as Biology and Society (BIOL F103X) or Natural History of Alaska (BIOL F104X) and General Chemistry I and II (CHEM F105X and CHEM F106X) during their first year, and to begin the BIOL F115X and F116X series in their sophomore year. Students unprepared for General Chemistry I (CHEM F105X) are encouraged to take Basic General Chemistry (CHEM F103X) beforehand.

Students majoring in the biological sciences must complete a capstone project during their junior or senior year. The goal of the capstone experience is to integrate skills and information students have learned in previous courses by conducting a mentored research project and communicating the results. Students will signal their intent to complete the capstone requirement by registering for Biology F400, capstone project. The capstone research project itself may be completed within one of the designated courses listed below, or by

working individually with a faculty mentor. If the capstone project is conducted within a designated course, a passing grade on the project itself is required to satisfy the capstone requirement regardless of the course grade. Biology course credit for mentored research is available as BIOL F490, F397, or F497. More information about the capstone requirement is posted on the Biology and Wildlife website ([www.bw.uaf.edu](http://www.bw.uaf.edu)). Students are strongly encouraged to speak to a biology advisor well before their senior year about how they plan to satisfy the capstone requirement.

### Major — B.A. Degree

1. Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete: CHEM F105X\* and F106X\*.)
2. Complete the B.A. degree requirements (page 132). As part of the B.A. degree requirements, complete STAT F200X\*. As part of the humanities and social sciences requirement, take at least 9 credits of upper-division course work. As part of the minor, take at least 3 credits of upper-division course work.
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 F260—Principles of Genetics.....	4
BIOL F481—Principles of Evolution.....	4
CHEM F321—Organic Chemistry.....	4
PHYS F103X—College Physics.....	4
  - b. Complete two of the following three biology breadth requirements:\*\*
 

BIOL F310—Animal Physiology (4)	
or BIOL F342—Microbiology (4)	
or BIOL F434W—Structure and Function of Vascular Plants (4)	
or BIOL F213X and F214X—Human Anatomy and Physiology I and II (8).....	4-8
BIOL F360—Cell and Molecular Biology.....	3
BIOL F371—Principles of Ecology.....	4
  - c. Complete three elective courses from course lists A, B, C or D below, at least one of which is designated a W course.\*\*\* If possible, satisfy all UAF core requirements for W and O courses and the biology capstone requirement with these elective courses.
  - d. Satisfy the capstone project requirement by passing BIOL F400, Capstone Project (0 credits), which requires the satisfactory completion of a capstone research project. The project can be done either working individually with a faculty member (e.g., by taking BIOL F490, or BIOL F497, or without course credits), or within one of the following courses:
 

BIOL F403W—Metabolism and Biochemistry (4)	
or BIOL F434W—Plant Structure and Function of Vascular Plants (4)	
or BIOL F441W,O/2—Animal Behavior (3)	
or BIOL F459O/2—Wildlife Nutrition (4)	
or BIOL F472W—Community Ecology (4)	
or BIOL F473W—Limnology (3).....	0-4
4. Minimum credits required.....

### Major — B.S. Degree without concentration

1. Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete: MATH F232X\* or MATH F251X\*; and CHEM F105X\* and F106X\*.)
2. Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree requirements, complete STAT F200X\* or STAT F300\* and PHYS F103X\* and PHYS F104X\* or PHYS F211X\* and PHYS F212X\*.)
3. Complete the following program (major) requirements:\*
 

BIOL F115X—Fundamentals of Biology I.....	4
BIOL F116X—Fundamentals of Biology II.....	4

- |   |     |
|---|-----|
| BIOL F260—Principles of Genetics.....                             | 4   |
| BIOL F360—Cell and Molecular Biology.....                         | 3   |
| BIOL F371—Principles of Ecology.....                              | 4   |
| BIOL F310—Animal Physiology (4)                                   |     |
| or BIOL F342—Microbiology (4)                                     |     |
| or BIOL F213X and F214X—Human Anatomy and Physiology I and II (8) |     |
| or BIOL F434W—Structure and Function of Vascular Plants (4).....  | 4-8 |
| BIOL F481—Principles of Evolution.....                            | 4   |
| CHEM F321—Organic Chemistry I (4)                                 |     |
| and either CHEM F325—Organic Chemistry II (4)                     |     |
| or CHEM F451—General Biochemistry — Metabolism (3).....           | 3-4 |
4. Complete the following electives (at least one must satisfy the W requirement):\*\*\*
 

**Organismal elective:**  
Complete one additional course from list D.....

**Biology electives:**  
Complete four additional courses at the 200 level or above, at least three of which must be from lists A, B, C or D.....
  5. Satisfy the capstone project requirement by passing BIOL F400, Capstone Project (0 credits), which requires the satisfactory completion of a capstone research project. The project can be done either working individually with a faculty member (e.g., by taking BIOL F490, or BIOL F497, or without course credits), or within one of the following courses:
 

BIOL F403W—Metabolism and Biochemistry (4)	
or BIOL F434W—Structure and Function of Vascular Plants (4)	
or BIOL F441W,O/2—Animal Behavior (3)	
or BIOL F456O/2—Wildlife Nutrition (4)	
or BIOL F472W—Community Ecology (4)	
or BIOL F473W—Limnology (3)	
  6. Minimum credits required.....

### Major — B.S. Degree with concentration

1. Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete: MATH F232X\* or MATH F251X\*; and CHEM F105X\* and F106X\*.)
2. Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree requirements, complete STAT F200X\* or STAT F300\* and PHYS F103X\* and PHYS F104X\* or PHYS F211X\* and PHYS F212X\*.)
3. Complete the following program (major) requirements:\*
 

BIOL F115X—Fundamentals of Biology I.....	4
BIOL F116X—Fundamentals of Biology II.....	4
BIOL F260—Principles of Genetics.....	4
BIOL F310—Animal Physiology (4)	
or BIOL F434W—Structure and Function of Vascular Plants (4)	
or BIOL F342—Microbiology (4)	
or BIOL F213X and F214X—Human Anatomy and Physiology I and II (8).....	4-8
BIOL F481—Principles of Evolution.....	4
CHEM F321—Organic Chemistry I (4)	
and either CHEM F325—Organic Chemistry II (4)	
or CHEM F451—General Biochemistry — Metabolism (3).....	3-4
4. Complete one of the following concentrations:\*\*\*. (When choosing courses to fulfill concentration requirements, students should consider the university requirement for two W courses and one O course, and the departmental requirement for a capstone project.)
  - a. **Cell and Molecular Biology**
    - i. As part of the program requirements, complete CHEM F325.
    - ii. Complete the following (at least one of which must satisfy the W requirement):
 

BIOL F360—Cell and Molecular Biology.....	3
CHEM F450—General Biochemistry — Macromolecules.....	3
CHEM F451—General Biochemistry — Metabolism.....	3

**Cell and molecular and physiology electives:**  
 Take three additional courses from lists A or B,  
 at least one of which must be from list A..... 9-12  
**Biology breadth elective:**  
 Take one additional course from lists C or D ..... 3-4

**b. Physiology**

Complete the following (at least one of which must satisfy the W requirement):  
 BIOL F360—Cell and Molecular Biology ..... 3  
**Physiology or cell and molecular biology electives:**  
 Take two courses from list A and two from list B..... 12-16  
**Biology breadth elective:**  
 Take one additional course from lists C or D..... 3-4  
**Biology elective:**  
 Take one additional course from lists A, B, C or D ..... 3-4

**c. Ecology and Evolutionary Biology**

Complete the following (at least one of which must satisfy the W requirement):  
 BIOL F371—Principles of Ecology ..... 4  
**Ecology and evolutionary biology electives:**  
 Take two additional courses from list C ..... 6-8  
**Organismal elective:**  
 Take one additional course from list D ..... 3-4  
**Biology breadth elective:**  
 Take one additional course from lists A or B ..... 3-4  
**Biology elective:**  
 Take one additional course from lists A, B, C or D ..... 3-4  
 STAT F401—Regression and Analysis of Variance (4)  
 or STAT F402—Scientific Sampling (3) ..... 3-4

5. Satisfy the capstone project requirement by passing BIOL F400, Capstone Project (0 credits), which requires the satisfactory completion of a capstone research project. The project can be done either working individually with a faculty member (e.g., by taking BIOL F490, or BIOL F497, or without course credits), or within one of the following courses:  
 BIOL F403W—Metabolism and Biochemistry (4)  
 or BIOL F434W—Structure and Function of Vascular Plants (4)  
 or BIOL F441W,O/2—Animal Behavior (3)  
 or BIOL F456O/2—Wildlife Nutrition (4)  
 or BIOL F472W—Community Ecology (4)  
 or BIOL F473W—Limnology (3) ..... 3-4
6. Minimum credits required ..... 120

**Biology elective course lists:\*\*\*\***

- **List A — Cell and Molecular Biology**  
 BIOL F342—Microbiology ..... 3  
 BIOL F360—Cell and Molecular Biology..... 3  
 BIOL F403W—Metabolism and Biochemistry..... 4  
 BIOL F417O—Neurobiology ..... 3  
 BIOL F435—Biology of Cancer..... 3  
 BIOL F460—Principles of Virology ..... 3  
 BIOL F462O—Concepts of Infectious Disease ..... 3  
 BIOL F465—Immunology ..... 3  
 BIOL F466—Advanced Cell and Molecular Biology  
   Laboratory ..... 3  
 CHEM F325—Organic Chemistry II..... 4  
 CHEM F450—General Biochemistry — Macromolecules ..... 3  
 CHEM F451—General Biochemistry — Metabolism ..... 3  
 CHEM F470—Cellular and Molecular Neuroscience ..... 3  
 CHEM F474—Neurochemistry ..... 3
- **List B — Physiology**  
 BIOL F310—Animal Physiology ..... 4  
 BIOL F335—Epidemiology ..... 3  
 BIOL F342—Microbiology ..... 4  
 BIOL F417O—Neurobiology ..... 3  
 BIOL F434W—Structure and Function in Vascular Plants..... 4  
 BIOL F441W,O/2—Animal Behavior..... 3  
 BIOL F455O—Environmental Toxicology..... 3

- BIOL F457W,O—Environmental Microbiology ..... 3
- BIOL F458—Vertebrate Endocrinology ..... 3
- BIOL F459O/2—Wildlife Nutrition ..... 4
- BIOL F462O—Concepts of Infectious Disease ..... 3
- BIOL F465—Immunology ..... 3
- BIOL F412—Exercise Physiology..... 3

• **List C — Ecology and Evolutionary Biology**

- BIOL F371—Principles of Ecology ..... 4
- BIOL F418—Biogeography ..... 3
- BIOL F433—Conservation Genetics ..... 3
- BIOL F441W,O/2—Animal Behavior..... 3
- BIOL F457W—Environmental Microbiology ..... 3
- BIOL F469O—Landscape Ecology and Wildlife Habitat ..... 3
- BIOL F471—Population Ecology ..... 3
- BIOL F472W—Community Ecology ..... 3
- BIOL F473W—Limnology ..... 3
- BIOL F474—Plant Ecology ..... 4
- BIOL F476O—Ecosystem Ecology ..... 3
- BIOL F483—Stream Ecology ..... 3
- BIOL F485W—Global Change Biology ..... 3
- BIOL F486—Vertebrate Paleontology..... 3
- BIOL F487—Conceptual Issues in Evolutionary Biology ..... 3
- BIOL F488—Arctic Vegetation Ecology: Geobotany ..... 3
- BIOL F489—Vegetation Description and Analysis..... 3
- WLF F301—Design of Wildlife Studies..... 3
- WLF F410—Wildlife Populations and their Management ..... 3

• **List D — Organismal Biology**

- BIOL F301—Biology of Fishes..... 4
- BIOL F331—Systematic Botany ..... 4
- BIOL F406—Entomology ..... 4
- BIOL F418—Biogeography ..... 4
- BIOL F425W—Mammalogy..... 3
- BIOL F426W,O/2—Ornithology ..... 3
- BIOL F427—Ichthyology ..... 4
- BIOL F486—Vertebrate Paleontology..... 3
- BIOL F489—Vegetation Description and Analysis..... 3

**Minor**

1. Complete the following program (minor) requirements: \*  
 BIOL F115X—Fundamentals of Biology I ..... 4  
 BIOL F116X—Fundamentals of Biology II ..... 4  
 BIOL F260—Principles of Genetics ..... 4
2. Complete one of the following course options:\*\*\*\*  
 BIOL F213X and F214X—Human Anatomy and Physiology I and II (8)  
 or BIOL F310—Animal Physiology (4)  
 or BIOL F342—Microbiology (4)  
 or BIOL F360—Cell and Molecular Biology (3)  
 or BIOL F371—Principles of Ecology (4)  
 or BIOL F434W—Structure and Function of Vascular Plants (4)  
 or BIOL F481—Principles of Evolution (4) ..... 3-8
3. Complete one additional course in biology at the 200 level or above ..... 3
4. Minimum credits required ..... 18

\* Students must earn a C- or better in each course.  
 \*\* Because biology breadth courses for the B.A. degree serve as prerequisites for many upper-division biology electives, course choices should be made with consideration of the elective biology courses the student plans to complete.  
 \*\*\* Independent study (BIOL F397 or F497) or research experience (BIOL F490, URSA F388 or URSA F488) courses may be substituted by petition for a maximum of two required elective courses in biology (3-4 credits of independent study or research per substituted course). The subject area of the independent study or research will determine which biological subject areas the credits satisfy.  
 \*\*\*\* Courses that satisfy upper-division elective credit may require prerequisites in addition to the required biology course.  
 Note: A foreign language is encouraged by the department in meeting requirements of the core curriculum.

# BUSINESS ADMINISTRATION

School of Management  
 Department of Business Administration  
 907-474-7461  
[www.uaf.edu/som/degrees/undergraduate/ba/](http://www.uaf.edu/som/degrees/undergraduate/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, and Marketing

1. Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete: BA F323X\*; and MATH F222X\*.)
2. Complete one oral-intensive course designated (O) and one oral-intensive designated (O/2), or complete two oral-intensive courses designated (O), or complete three oral-intensive courses designated (O/2).
3. Complete the B.B.A. degree requirements. (See page 133. As part of the Common Body of Knowledge, complete AIS F310.)
4. Complete the following:\*
  - BA F151—Introduction to Business.....3
  - ENGL F314W,O/2—Technical Writing .....3
5. Complete the following program (major) requirements:\*
  - BA F307—Introductory Human Resource Management.....3
  - ECON F321—Intermediate Microeconomics (3)  
or ECON F351—Public Finance.....3
  - BA F460O—International Business (3)  
or BA F461—International Finance (3)  
or ECON F463W—International Economics (3).....3
6. Complete an additional 6 credits from ACCT, BA or ECON .....6
7. 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. **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
8. Minimum credits required .....120

\* Students must earn a C- grade 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 finance, general business or marketing.*

### Minor\*

#### Finance

1. Complete the following:
  - ACCT F261—Principles of Financial Accounting.....3
  - BA F151—Introduction to Business.....3
  - BA F325—Financial Management .....3
  - ECON F201—Principles of Economics I: Microeconomics .....3
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 .....15

#### General Business

1. Complete five 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.
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
  - BA F360—Operations Management .....3
  - BA F390—Organizational Theory and Behavior.....3
  - ECON F201—Principles of Economics I: Microeconomics .....3
2. Minimum credits required .....15

#### Marketing

1. Complete five courses from the following:
  - 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
  - ECON F227—Intermediate Statistics for Economics and Business .....3
2. Minimum credits required .....15

#### Sports Management

1. Complete the following:
  - BA F280—Sports Leadership.....3
  - BA F281—Sports Management.....3
2. Complete nine credit hours from the following:
  - ACCT F261—Principles of Financial Accounting.....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

## CHEMISTRY

College of Natural Science and Mathematics  
Department of Chemistry and Biochemistry  
907-474-5510  
[www.uaf.edu/chem/](http://www.uaf.edu/chem/)

### B.A., B.S. Degrees

Minimum Requirements for Degrees: 120 credits

Our programs prepare students for employment as research chemists in federal, state, municipal, academic or industrial laboratories, and in premedicine as laboratory technicians, industry supervisors and technical sales personnel. Our programs also provide a technical base for chemistry teachers. 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 MD degrees.

The chemistry curriculum meets the American Chemical Society standards covering 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. The B.S. and B.A. programs may be completed without an optional concentration, or students can opt for an additional focus in biochemistry, environmental chemistry or forensic chemistry. The B.S. programs generally prepare students for a career in chemistry or biochemistry, or for professional school. The B.S. in chemistry is an ACS-approved degree program. The environmental chemistry concentration provides courses that help students study the chemistry of the natural environment by adding geology, biology or atmospheric courses, and it prepares students for graduate studies and/or careers in the environmental industry. The biochemistry concentration provides an enhanced curriculum in biological chemistry for students seeking advanced careers in biochemistry, medicine or health sciences. The B.A. degree provides breadth in the curriculum for study of a minor subject and requires more humanities courses. The B.A. best prepares students for careers in chemistry-related fields like environmental law, forensic science, science education, anthropology, etc. Limited teaching assistantships are often available for upper-division students, which strengthen leadership and communication skills.

The bachelor's degrees in chemistry and concentrations in biochemistry and environmental chemistry provide excellent research opportunities and background for undergraduate students through connection to corresponding graduate programs. See graduate programs in chemistry, biochemistry and molecular biology, and environmental chemistry.

The Chemistry and Biochemistry Department is housed in the Reichardt Building, where laboratories are equipped with research-grade instrumentation, providing hands-on experience to students for entry into graduate school or industry. See the departmental website for more information, [www.uaf.edu/chem/](http://www.uaf.edu/chem/).

### Major — B.A. Degree

1. Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete: MATH F251X; PHYS F103X and PHYS F104X, or PHYS F211X and PHYS F212X.)
  2. Complete the B.A. degree requirements. (See page 132. As part of the B.A. degree requirements, complete: MATH F252X.)
  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.....                    | 4   |
| CHEM F325—Organic Chemistry II (4)                    |     |
| or CHEM F351—General Biochemistry- Metabolism(3)..... | 3-4 |

- |  |   |
|--|---|
| CHEM F314W—Analytical Instrumental Laboratory (3)..... | 3 |
| CHEM F331—Physical Chemistry I.....                    | 4 |
| CHEM F481—Seminar.....                                 | 1 |
| CHEM F482O—Seminar.....                                | 2 |
4. Ensure that you have satisfied the university requirement of 39 upper-division credits and two writing-intensive (W) courses, which will typically require either taking more upper-division chemistry courses or a significant number of upper-division courses in other disciplines, likely your minor.
  5. Minimum credits required .....120
- \* Students must earn a C- grade or better in each course.  
Note: This degree does not encompass the depth required to be an American Chemistry Society-approved chemistry degree. Students taking this degree will not receive a certificate from ACS. Students intending to continue in chemistry or biochemistry careers or graduate studies should select a B.S. degree program.

### Optional Concentration: Forensic Chemistry

1. Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete: MATH F251X; PHYS F103X and PHYS F104X, or PHYS F211X and PHYS F212X.)
  2. Complete the B.A. degree requirements. (See page 132. As part of the B.A. degree requirements, complete: MATH F252X.)
  3. Complete the program (major) requirements as listed under chemistry B.A. degree, including:  
CHEM F314W—Analytical Instrumental Laboratory .....3
  4. Complete the following:\*
- |                                      |   |
|--------------------------------------|---|
| CHEM F332—Physical Chemistry II..... | 4 |
|--------------------------------------|---|
5. Earn a minor in justice using the following courses to complete the 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 .....120
- \* Students must earn a C- grade or better in each course.  
\*\* JUST F300X may not be used to fulfill core ethics requirement.  
Note: This degree does not encompass the depth required to be an American Chemistry Society-approved chemistry degree. Students taking this track will not receive a certificate from ACS. Students intending to continue in chemistry or biochemistry careers or graduate studies should select a B.S. degree program.

### Major — B.S. Degree (American Chemistry Society-approved)

1. Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete: MATH F251X; PHYS F103X and PHYS F104X, or PHYS F211X and PHYS F212X.)
  2. Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree, complete: MATH F252X. Chemistry foundation courses may be used toward partial fulfillment of the natural science requirement.)
  3. Complete the 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.....               | 4 |
| CHEM F325—Organic Chemistry II.....              | 4 |
| CHEM F331—Physical Chemistry I.....              | 4 |

CHEM F332—Physical Chemistry II .....	4
CHEM F351—General Biochemistry — Metabolism .....	3
CHEM F434W—Chemistry Capstone Laboratory.....	3
CHEM F481—Seminar .....	1
CHEM F482O—Seminar .....	2
CHEM F488—Undergraduate Chemistry and Biochemistry Research .....	3
MATH F253X—Calculus III.....	4
4. Complete two of the following:*	
CHEM F402—Inorganic Chemistry.....	3
CHEM F450—General Biochemistry — Macromolecules .....	3
CHEM F314W—Analytical Instrumental Laboratory .....	3
5. Minimum credits required .....	120
* Students must earn a C- grade or better in each course.	
<i>Note: Upon completing the required curriculum and fulfilling all general uni- versity requirements, students will receive a certificate from the American Chemical Society indicating approval of their degree program.</i>	
<b>Optional Concentrations: Biochemistry, Environmental Chemistry</b>	
<b>Biochemistry</b>	
1. Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete: MATH F251X; PHYS F103X and PHYS F104X, or PHYS F211X and PHYS F212X.)	
2. Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree requirements, complete: MATH F252X. Chemistry foundation courses may be used toward partial fulfillment of the natural science requirement.)	
3. Complete the following program (major) requirements:*	
CHEM F105X—General Chemistry I.....	4
CHEM F106X—General Chemistry II.....	4
BIOL F115X—Fundamentals of Biology I.....	4
BIOL F116X—Fundamentals of Biology II .....	4
CHEM F202—Basic Inorganic Chemistry .....	3
CHEM F212—Chemical Equilibrium and Analysis .....	4
CHEM F321—Organic Chemistry I .....	4
CHEM F325—Organic Chemistry II .....	4
CHEM F331—Physical Chemistry I .....	3
CHEM F351—General Biochemistry — Metabolism .....	3
CHEM F450—General Biochemistry — Macromolecules .....	3
CHEM F481—Seminar .....	1
CHEM F482O—Seminar .....	2
CHEM F488—Undergraduate Chemistry and Biochemistry Research .....	6
4. Complete four of the following advanced chemistry/math courses:* **	
CHEM F332—Physical Chemistry II .....	4
CHEM F434W—Chemistry Capstone Laboratory.....	3
CHEM F314W—Analytical Instrumental Laboratory .....	3
CHEM F402—Advanced Inorganic Chemistry .....	3
CHEM F420—Applications of NMR Spectroscopy .....	3
MATH F253X—Calculus III.....	4
5. Complete 10 credits of the following biology/biochemistry courses:* **	
CHEM F360—Cell and Molecular Biology.....	4
CHEM F455O—Environmental Toxicology.....	3
CHEM F470—Cellular and Molecular Neuroscience .....	3
CHEM F474—Neurochemistry.....	3
BIOL F240—Beginnings in Microbiology.....	4
BIOL F260—Principles of Genetics.....	4
BIOL F310—Animal Physiology .....	4
BIOL F342—Microbiology.....	4
BIOL F402W—Biomedical and Research Ethics .....	3
BIOL F417O—Neurobiology.....	3
BIOL F462O—Concepts in Infectious Disease.....	3
BIOL F465—Immunology.....	3

6. Minimum credits required .....	120
* Students must earn a C- grade or better in each course.	
** Courses selected under numbers 4 and 5 above must meet baccalaureate degree requirements for 39 upper-division credits and two writing-intensive courses.	

*Note: This degree is intended for students interested in careers in biochemistry or pre-professional students, providing extra depth in biological sciences. The selection of optional courses will determine if the curriculum conforms to the American Chemistry Society-approved chemistry degree. Students desiring an ACS-approved chemistry degree should consult with their advisor about optional courses that will meet ACS requirements.*

### Environmental Chemistry

1. Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete: MATH F251X; PHYS F103X and PHYS F104X, or PHYS F211X and PHYS F212X.)	
2. Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree, complete: MATH F252X. Chemistry foundation courses may be used toward partial fulfillment of the natural sci- ence requirement.)	
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 F314W—Analytical Instrumental Laboratory .....	3
CHEM F321—Organic Chemistry I .....	4
CHEM F325—Organic Chemistry II .....	4
CHEM F331—Physical Chemistry I .....	4
CHEM F332—Physical Chemistry II .....	4
CHEM F434W—Chemistry Capstone Laboratory.....	3
CHEM F481—Seminar .....	1
CHEM F482O—Seminar .....	2
CHEM F488—Undergraduate Chemistry and Biochemistry Research .....	3
MATH F253X—Calculus III.....	3
4. Complete two of the following:*	
ATM F101X—Weather and Climate of Alaska.....	4
BIOL F115X—Fundamentals of Biology I.....	4
BIOL F116X—Fundamentals of Biology II .....	4
GEOS F101X—The Dynamic Earth .....	4
GEOS F262—Rocks and Minerals .....	3
5. Complete two of the following:*	
ATM F401—Introduction to Atmospheric Science.....	3
BIOL F342—Microbiology.....	4
CHEM F406—Atmospheric Chemistry .....	3
CHEM F455O—Environmental Toxicology .....	3
GEOS F417—Introduction to Geochemistry .....	3
NRM F380W—Soils and the Environment .....	3
6. Minimum credits required .....	120
* Students must earn a C- grade or better in each course.	
<i>Note: A course in statistics (e.g. STAT F200X, STAT F300, or GEOS F430) is suggested. The selection of optional courses will determine if the curriculum conforms to the American Chemistry Society-approved chemistry degree. Students desiring an ACS-approved chemistry degree should consult with their advisor about optional courses that will meet ACS requirements.</i>	

### Requirements for Chemistry Teachers (grades 7-12)

1. Complete all the requirements of the chemistry B.A. or B.S. degree.	
2. All prospective science teachers must complete the following: PHIL F481—Philosophy of Science.....	3
<i>Note: We strongly recommend that prospective secondary science teachers seek advising from the UAF School of Education early in your undergraduate de- gree program so that you can be appropriately advised of the State of Alaska requirements for teacher licensure.</i>	

## Minors

### Chemistry

- Complete the following:  
CHEM F105X—General Chemistry I.....4  
CHEM F106X—General Chemistry II.....4
- Complete the following:  
CHEM F212—Chemical Equilibrium and Analysis\* .....4  
CHEM F321—Organic Chemistry I .....4  
CHEM F325—Organic Chemistry II .....4  
CHEM F331—Physical Chemistry I .....4
- Complete one of the following additional chemistry lab courses:  
CHEM F202—Basic Inorganic Chemistry .....3  
CHEM F332—Physical Chemistry II .....4
- Minimum credits required .....27

### Biochemistry

- Complete the following:  
CHEM F105X—General Chemistry I.....4  
CHEM F106X—General Chemistry II.....4
- Complete the following:  
CHEM F321—Organic Chemistry I .....4  
CHEM F325—Organic Chemistry II .....4  
CHEM F331—Physical Chemistry I .....4  
CHEM F351—General Biochemistry — Metabolism.....3
- Complete one of the following chemistry lab courses:  
CHEM F202—Basic Inorganic Chemistry .....3  
CHEM F212—Chemical Equilibrium and Analysis.....4
- Minimum credits required .....26

## CHILD DEVELOPMENT AND FAMILY STUDIES

College of Rural and Community Development  
Department of Social and Human Development  
[www.uaf.edu/rural/](http://www.uaf.edu/rural/)

### B.A. Degree

Minimum Requirements for Degree: 120 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 administration, curriculum and teaching, family support, or infants and toddlers.

The child development and family studies program meets professional preparation standards developed by the National Association for the Education of Young Children. These six core standards and field experience expectations guide the CDFS B.A. program content and outline a set of common expectations for professional knowledge, skills and dispositions within the field of early care and education in conjunction with family studies.

The program supports students who desire a strong foundation in the field of early childhood by integrating the early childhood education A.A.S. content requirements with that of the child development and family studies B.A.. Students are required to complete the program major and one of the specialized concentration areas: administration within the early childhood field, curriculum and teaching, family support, or infant and toddler. Students entering the child development and family studies B.A. program with an A.A. or A.A.S. degree in early childhood education from a regionally accredited college or university will receive 23 transfer credits toward the program major. Any additional courses will need to be evaluated on an individual basis.

Flexible course delivery fosters successful completion for early childhood professionals living in both rural and urban areas of

Alaska. All program and concentration area courses must be completed with a C grade or better, with the exclusion of all clinical practice course work which must be completed with a B grade or better. Completion of the CDFS B.A. will meet requirements for both a major and minor.

### Major — B.A. Degree

- Complete the general university requirements.\* (See page 127. As part of the core curriculum requirements, the following courses are recommended: ENGL F213X\*, MATH F113X\*, MATH F122X\*, or MATH F151X\*; BIOL F104X\*, GEOG F111X\* or GEOS F120X\*.)
- Complete the B.A. degree requirements. (See page 132. As part of the B.A. social science degree requirements, complete PSY F101.)
  - Complete three of the following recommended humanities/social science courses as part of your B.A. degree requirements:\*  
ANS F242—Native Cultures of Alaska .....3  
ANS F320W—Language and Culture: Applications to Alaska .....3  
ANS F330—Yup'ik Parenting and Child Development.....3  
ANS F461—Native Ways of Knowing .....3  
ANTH F407—Kinship and Social Organizations .....3  
LING F303W,O—Language Acquisition .....3
  - Complete one of the following recommended mathematics courses as part of your B.A. core requirements:\*  
CS F101—Computers and Society.....3  
CS F102—Introduction to Computer Science .....3  
MATH F113X—Concepts and Contemporary Applications of Mathematics .....3  
MATH F122X—Algebra for Business and Economics.....3  
MATH F151X—College Algebra for Calculus .....4
- Complete the following program (major) requirements:\*  
ECE F101—Overview of the Profession .....3  
ECE F104—Child Development I: Prenatal, Infants and Toddlers .....3  
ECE F107—Child Development II: The Preschool and Primary Years .....3  
ECE F110—Safe, Healthy, Learning Environments .....3  
ECE F140—Positive Social and Emotional Development .....3  
ECE F210—Child Guidance .....3  
ECE F229—Foundations in Nutrition and Physical Wellness.....3  
ECE F235—Screening, Assessment and Recording (2) or ECE F130—Culture, Learning, and the Young Child (2).....2  
ECE F305—Social and Emotional Development: Reflection and Practice.....3  
ECE F342O—Family Relationships.....3  
ECE F350—Play: Foundation for Development.....3  
ECE F445W—Adolescence through the Lifespan .....3  
ECE F480—Child Development and Family Studies Portfolio.....1
- Complete one of the following concentrations:\*

#### Administration Within the Early Childhood Field\*\*\*

Complete the following:\*

- ECE F340—Financial Management .....3
- ECE F341W—Personnel Management.....3
- ECE F471—Clinical Practice: Organizational Action Research.....3
- CIOF F150—Computer Business Applications.....3
- ENGL F212—Business, Grant and Report Writing.....3
- BA S301—Principles of Management (UAS) .....3
- BA S343—Principles of Marketing (UAS) .....3
- BA S490—Political and Social Environment of Business (UAS).....3

Note: ECON F201 or ECON F202 is a prerequisite for BA S490.

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:\*

- ECE F240—Inclusion of Children with Special Needs.....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
ECE F472—Clinical Practice: Classroom Research**.....	3
ECE F473—Clinical Practice: Classroom Management** (3) or ECE F270—Practicum II as approved by CDFS program**(3).....	3

**Family Support\*\*\*\***

Complete the following:\*

ECE F242—Child and Family Ecology.....	3
ECE F301—Parents as Partners in Education (3) or ECE F302—Building Home Program Relationships: Prenatal to 3 Years (3).....	3
ECE F306W—Building Bridges to Support Family Mental Health.....	3
ECE F405—Seminar in Culture and Child Rearing Practices.....	3
ECE F410—Supporting Family Relationships through Mentoring.....	3
ECE F442—Family Resource Management.....	3
ECE F471—Clinical Practice: Organizational Action Research.....	3
SWK F360—Child Abuse and Neglect.....	3

**Infant and Toddler\*\*\***

Complete the following:\*

ECE F214—Curriculum III: Infant and Toddlers.....	3
ECE F302—Building Home Program Relationships.....	3
ECE F304W—Attachment and Social Development.....	3
ECE F320—Environment and Curriculum for Infants and Toddlers.....	3
ECE F405—Seminar in Culture and Child Rearing Practices.....	3
ECE F421—From Babbling to Talking to Early Literacy.....	3
ECE F472—Clinical Practice: Classroom Research**.....	3
ECE F473—Clinical Practice: Classroom Management** (3) or ECE F270—Practicum II as approved by CDFS program** (3).....	3

5. Minimum credits required.....	120
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\* Students must earn a C grade or better in each course.

\*\* Student must earn a B grade or higher in each course.

\*\*\* Students completing any CFDS concentration will need an additional 6 upper-division (300-400) credits within the Humanities/Social Science B.A. general degree requirements.

\*\*\*\* Note: Students completing the family support concentration need to complete SWK F103 as a prerequisite to SWK F360.

**For students entering the program with an A.A. or A.A.S. degree in early childhood education from a regionally accredited college or university (23 credits accepted as a block of courses).**

- Complete the general university requirements.\* (See page 127. As part of the core curriculum requirements, the following courses are recommended: ENGL F213X\*, MATH F113X\*, MATH F122X\* or MATH F151X\*; BIOL F104X\*, GEOG F111X\* or GEOS F120X\*.)
- Complete the B.A. degree requirements. (See page 132. As part of the B.A. social science degree requirements, complete PSY F101.)\*
  - Complete three of the following humanities/social science courses as part of the B.A. degree requirements:
 

ANS F242—Native Cultures of Alaska.....	3
ANS F320W—Language and Culture: Applications to Alaska.....	3
ANS F330—Yupik Parenting and Child Development.....	3
ANS F461—Native Ways of Knowing.....	3
ANTH F407—Kinship and Social Organizations.....	3
LING F303W,O—Language Acquisition.....	3
  - Complete one of the following mathematics courses as part of the B.A. core requirements:
 

CS F101—Computers and Society.....	3
CS F102—Introduction to Computer Science.....	3
MATH F113X—Concepts and Contemporary Applications of Mathematics.....	3
MATH F122X—Algebra for Business and Economics.....	4
MATH F151X—College Algebra for Calculus.....	3

- Complete the following program (major) requirements:
 

ECE F305—Social and Emotional Development: Reflection and Practice.....	3
ECE F3420—Family Relationships.....	3
ECE F350—Play: Foundation for Development.....	3
ECE F445W—Adolescence through the Lifespan.....	3
ECE F480—Child Development and Family Studies Portfolio.....	1

- Complete one of the following concentrations:\*

**Administration Within the Early Childhood Field\*\*\***

Complete the following:\*

ECE F340—Financial Management.....	3
ECE F341W—Personnel Management.....	3
ECE F471—Clinical Practice: Organizational Action Research.....	3
CIOF F150—Computer Business Applications.....	3
ENGL F212—Business, Grant and Report Writing.....	3
BA S301—Principles of Management (UAS).....	3
BA S343—Principles of Marketing (UAS).....	3
BA S490—Political and Social Environment of Business (UAS).....	3

Note: ECON F201 or ECON F202 is a prerequisite for BA S490.

Note: This specialization is offered in collaboration with the University of Alaska Southeast. For course descriptions of UAS courses see the current University of Alaska Southeast catalog. These courses are available by distance delivery.

**Curriculum and Teaching\*\*\***

Complete the following:\*

ECE F240—Inclusion of Children with Special Needs.....	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
ECE F472—Clinical Practice: Classroom Research**.....	3
ECE F473—Clinical Practice: Classroom Management** (3) or ECE F270—Practicum II as approved by CDFS program**(3).....	3

**Family Support\*\*\*\***

Complete the following:\*

ECE F242—Child and Family Ecology.....	3
ECE F301—Parents as Partners in Education (3) or ECE F302—Building Home Program Relationships: Prenatal to 3 Years (3).....	3
ECE F306W—Building Bridges to Support Family Mental Health.....	3
ECE F405—Seminar in Culture and Child Rearing Practices.....	3
ECE F410—Supporting Family Relationships through Mentoring.....	3
ECE F442—Family Resource Management.....	3
ECE F471—Clinical Practice: Organizational Action Research.....	3
SWK F360—Child Abuse and Neglect****.....	3

**Infant and Toddler\*\*\***

Complete the following:\*

ECE F214—Curriculum III: Infant and Toddlers.....	3
ECE F302—Building Home Program Relationships.....	3
ECE F304W—Attachment and Social Development.....	3
ECE F320—Environment and Curriculum for Infants and Toddlers.....	3
ECE F405—Seminar in Culture and Child Rearing Practices.....	3
ECE F421—From Babbling to Talking to Early Literacy.....	3
ECE F472—Clinical Practice: Classroom Research**.....	3
ECE F473—Clinical Practice: Classroom Management** (3) or ECE F270—Practicum II as approved by CDFS program** (3).....	3

5. Minimum credits required.....	120
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\* Students must earn a C grade or better in each course.

\*\* Student must earn a B grade or higher in each course.

\*\*\* Students completing any CFDS concentration will need an additional 6 upper-division (300-400) credits within the Humanities/Social Science B.A. general degree requirements.

\*\*\*\* Note: Students completing the family support concentration need to complete SWK F103 as a prerequisite to SWK F360.

## CIVIL ENGINEERING

College of Engineering and Mines  
Department of Civil and Environmental Engineering  
907-474-7241  
<http://cem.uaf.edu/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-launch 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 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.

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.

For more information about the civil engineering program mission, goals and educational objectives, visit <http://cem.uaf.edu/cee/abet/>.

### Major — B.S. Degree

1. Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete: MATH F251X\*, CHEM F105X\* and CHEM F106X\*.)
  2. Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree requirements, complete: MATH F252X\*; 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 |
| CE F331—Structural Analysis.....                        | 3 |
| CE F334—Properties of Materials.....                    | 3 |
| CE F341—Environmental Engineering.....                  | 4 |
| CE F344—Water Resources Engineering.....                | 3 |

CE F432—Steel Design.....	3
CE F438W,O—Design of Engineered Systems.....	3
CE F490—Civil Engineering Seminar.....	0.5
CE F491—Civil Engineering Seminar.....	0.5
DRT F210—Intermediate CAD.....	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 F253X—Calculus III.....	4
MATH F302—Differential Equations.....	3
Technical electives**.....	12

4. Complete the Fundamentals of Engineering (FE) examination administered by the State of Alaska.
5. Minimum credits required.....134

\* Students must earn a C- grade or better in each course.

\*\* Technical electives must include 3 credits in the field of environmental engineering, construction, 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 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/](http://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.

Communication courses are available online and in the classroom.

The minor in dispute resolution gives students a theoretical background for and practice of alternative dispute resolution. The curriculum supports the developing restorative justice emphasis of the B.A. of justice, and is applicable to business administration, social work, psychology and counseling contexts.

### Major — B.A. Degree

1. Complete the general university requirements (page 127).
  2. Complete the B.A. degree requirements (page 132).
  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 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.

## Minors

### Communication

- Complete the following:  
COMM F180—Introduction to Human Communication .....3  
COMM F330—Intercultural Communication (3)  
or COMM F351—Gender and Communication.....3
- Complete communication electives at the F300 level or above .....9
- Minimum credits required .....

### Alternative Dispute Resolution

- Complete the following:\*  
COMM F201—Dispute Resolution and Restorative Practices .....3
- Complete four of the following:\*  
COMM F302—Dispute Systems .....

Note: F400-level courses require junior standing or instructor permission

\* Students must earn a C- grade or better in each course.

## COMPUTER ENGINEERING

College of Engineering and Mines  
Department of Electrical and Computer Engineering  
907-474-7137  
<http://cem.uaf.edu/ece/>

### B.S. Degree

Minimum Requirements for Degree: 134 credits

The mission of the 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, 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 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:

- 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.
- 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.
- 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 <http://cem.uaf.edu/ece/abet/>.

### Major — B.S. Degree

- Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete: MATH F251X, CHEM F105X and CHEM F106X or PHYS F213X.)\*

- Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree requirements, complete: MATH F252X, PHYS F211X and PHYS F212X.)\*
- 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 and Computer 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 .....3
  - ESM F450W—Economic Analysis and Operations.....3
  - MATH F253X—Calculus III.....4
  - MATH F302—Differential Equations .....3
  - MATH F307—Discrete Mathematics .....3
  - Approved electives\*\* .....6
  - Approved engineering science elective\*\*\* .....3
- Complete the Fundamentals of Engineering (FE) examination administered by the State of Alaska.
- Minimum credits required .....134
  - \* Students must earn a C- grade 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](http://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 and the Institute for Electrical and Electronic Engineers. The B.S. degree is accredited by the Computing Accreditation Commission of the Accreditation Board for Engineering and Technology.

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

- Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete: MATH F251X\* and any approved ethics course.)
- Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree requirements, complete: MATH F252X\*, PHYS F211X\* and PHYS F212X\*.)
- Complete the following:
  - MATH F253X—Calculus III.....4
  - MATH F307—Discrete Mathematics .....3
  - STAT F300—Statistics.....3
- 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
- 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 F371—Computer Ethics and Technical Communication .....3
  - CS F372—Software Construction.....3
  - CS F411—Analysis of Algorithms .....3
  - CS F441—Systems Architecture (3)  
 or EE F443—Computer Engineering (4) .....3-4
  - CS F471W—Senior Capstone I .....3
  - CS F472W/O—Senior Capstone II.....3
  - EE F341—Digital and Computer Analysis and Design .....4
  - Electives in computer science at the F300 or F400 level  
 or approved electives (such as EE F443).....9
- Minimum credits required .....120
  - \* Students must earn a C- grade or better in each course.

## Major — B.S./M.S. Degree

- Complete the following admission requirements:
  - CS major (junior preferred) or senior standing.
  - 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.
  - Submit a study goal statement.
  - Submit a UAF graduate application for admission.
- Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete: MATH F251X\* and any approved ethics course.)
- Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree requirements, complete: MATH F252X\*, PHYS F211X\* and PHYS F212X\*.)
- Complete the following B.S. 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 F371—Computer Ethics and Technical Communication .....3
  - CS F372—Software Construction.....3
  - CS F411—Analysis of Algorithms.....3
  - CS F441—Systems Architecture (3)  
 or EE F443—Computer Engineering (4) .....3-4
  - CS F471W—Senior Capstone I .....3

CS F472W,O—Senior Capstone II .....	3
EE F341—Digital and Computer Analysis and Design .....	4
MATH F253X—Calculus III.....	4
MATH elective at the F300/F400 level.....	3
MATH F307—Discrete Mathematics .....	3
STAT F300—Statistics.....	3
5. Complete the following M.S. program (major) requirements:	
CS F600—Professional Software Development .....	4
CS F601—Algorithms, Architecture and Languages .....	4
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 computer science theory and practice.	
7. Minimum credits required .....	141
* Students must earn a C- grade 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 will be accepted in F600-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.

### Minor

1. Complete the following:*	
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 C- grade 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 Geosciences  
907-474-7565  
[www.uaf.edu/geology/](http://www.uaf.edu/geology/)

### B.A. Degree

Minimum Requirements for Degree: 120-130 credits

This program provides broad training in various aspects of earth systems science. Three concentrations are available: earth systems science, geological hazards and mitigation, and secondary education. The concentrations allow students to focus on different interests and career paths during their junior and senior years but offer considerable flexibility during the freshman and sophomore years.

The earth science concentration offers students a sound background in a broad spectrum of geoscience disciplines, with an emphasis on the interaction between earth systems. The geological hazards and mitigation concentration is designed for students who wish to pursue careers in communicating science, hazards analysis or emergency management-related natural disasters. The secondary education concentration is designed for students who plant to teach earth science in secondary school in Alaska. Requirements for certified teachers have been built in to this concentration in consultation with the School of Education. Students choosing this concentration should consult with both the Department of Geology and Geophysics and the School of Education for advising.

### Major — B.A. Degree

1. Complete the general university requirements. (See page 127. 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 132. Note that social science (s) courses are included in each of the concentrations. These courses may also be applied to the B.A. degree requirements).
3. Complete the following foundation courses:
  - GEOS F101X—The Dynamic Earth (4)
  - or GEOS F120X—Glaciers, Earthquakes and Volcanoes (4) .....
  - GEOS F112X—The History of Earth and Life (4)
  - or GEOS F106X—Life in the Age of Dinosaurs(4).....
4. Complete one of the following concentrations:

### Earth Systems Science

- a. Complete the following:
  - GEOS F304—Geomorphology .....
  - GEOS F315W—Paleobiology and Paleontology .....
- b. Complete one course from each of the following areas:
  - Earth Systems**
    - GEOG F101—Expedition Earth: Introduction to Geography .....
    - MSL F111X—The Oceans.....
    - NRM F101—Natural Resource Conservation Policy .....
    - PHYS F175X—Introduction to Astronomy .....
  - Earth Materials**
    - GEOS F213—Mineralogy.....
    - GEOS F262—Rocks and Minerals .....
  - Geospatial Sciences**
    - GEOG F338—Introduction to Geographic Information Systems ....
    - GEOS F222—Fundamentals of Geospatial Sciences.....
    - GEOS F225—Field and Computer Methods in Geology (2) and GEOS F408—Photogeology (2) .....
- c. Complete one course from any two of the following areas:
  - Weather and Climate**
    - ATM F101X—Weather and Climate of Alaska.....
    - GEOG F307—Weather and Climate.....
  - Natural Resources**
    - GEOG F302—Geography of Alaska .....
    - GEOG F402—Resources and Environment .....
  - Geoscience**
    - GEOS F309—Tectonics.....
    - GEOS F322—Stratigraphy and Sedimentation.....
  - Geobiology**
    - GEOS F485—Mass Extinctions, Neocatastrophism, and the History of Life .....
    - GEOS F486—Vertebrate Paleontology.....
- d. Complete 9 additional credits at the F300 level or above with an emphasis in geology, geography, biology, natural resources management or other earth science-related field as approved by the undergraduate advisor, including one W (writing-intensive) course and one O (oral-intensive) course.....
- e. Complete any UAF minor. Courses used to satisfy the upper-division emphasis may also be applied towards the requirements for a minor.
- f. Minimum credits required .....

### Geological Hazards and Mitigation

- a. As part of the core curriculum requirements, complete SOC F100X and COMM F300X.
- b. Complete the following:
  - ED F486W,O—Media Literacy.....
  - ENGL F314W,O/2—Technical Writing .....
  - GEOS F304—Geomorphology .....
  - GEOS F380—Geological Hazards .....
  - GEOS F406—Volcanology .....
  - HSEM F301—Principles of Emergency Management and

## ECONOMICS

School of Management  
Department of Economics  
907-474-7461

[www.uaf.edu/som/degrees/undergraduate/econ/](http://www.uaf.edu/som/degrees/undergraduate/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 127. As part of the core curriculum requirements, complete: MATH F222X\* or MATH F251X.\*)
2. Complete the B.A. degree requirements. (See page 132. As part of the B.A. degree requirements, complete: MATH F121X\*, ECON F201 and ECON F202, and 3 credits of a political science elective.)
3. Complete the following:\*
  - ACCT F261—Principles of Financial Accounting.....3
  - ECON F227—Intermediate Statistics for Economics and Business.....3
  - ECON F321—Intermediate Microeconomics.....3
  - ECON F324—Intermediate Macroeconomics.....3
  - ECON F327—Intermediate Econometrics for Forecasting and Business.....3
  - ECON F463W—International Economics.....3
  - Economics electives at the F300 level or above\*\*.....18

4. Minimum credits required .....120

\* Students must earn a C- grade 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 127. As part of the core curriculum requirements, complete: MATH F222X\* and BA F323X.\*)
2. Complete the B.B.A. degree requirements. (See page 133. 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 F327—Intermediate Econometrics for Forecasting and Business.....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

- Homeland Security.....3
- PHYS F175X—Introduction to Astronomy.....4
- STAT F200X—Elementary Probability and Statistics.....3
- c. Complete one course from each of the following areas:\*
  - Earth Materials**
  - GEOS F213—Mineralogy.....4
  - GEOS F262—Rocks and Minerals.....3
  - Geospatial Sciences**
  - GEOS F222—Fundamentals of Geospatial Sciences.....3
  - GEOS F225—Field and Computer Methods in Geology (2)  
and GEOS F408—Photogeology (2).....4
  - Weather and Climate**
  - ATM F101X—Weather and Climate of Alaska.....4
  - GEOG F307—Weather and Climate.....3
- d. Complete a minimum of two courses from one of the following specialized areas:\*
  - Mitigation**
  - HSEM F412—Emergency Planning and Preparedness.....3
  - HSEM F423—Disaster Response Operations and Management.....3
  - HSEM F434—All Hazards Risk Analysis.....3
  - Communications**
  - COMM F335O—Organizational Communications.....3
  - COMM F353—Conflict, Mediation, and Communication.....3
  - COMM F441—Persuasion.....3
- e. Complete any the requirements for a minor in geology, paleontology, geospatial sciences, geography, communications, journalism, sociology or other field related to communicating and mitigating natural hazards, as approved by the undergraduate advisor.
- f. Minimum credits required .....120

#### Secondary Education

- Complete the following:\*
  - GEOG F101—Expedition Earth: Introduction to Geography.....3
  - GEOS F262—Rocks and Minerals.....3
  - GEOS F315W—Paleobiology and Paleontology.....4
  - GEOS F475—Presentation Techniques in the Geosciences.....2
  - MSL F111X—The Oceans.....4
  - PHYS F175X—Introduction to Astronomy.....4
  - PSY F101—Introduction to Psychology.....3
- Complete one course from each of the following areas:\*
  - Landform Analysis**
  - GEOG F111X—Earth and Environment: Elements of Physical Geography.....4
  - GEOS F304—Geomorphology.....3
  - Geospatial Sciences**
  - GEOS F222—Fundamentals of Geospatial Sciences.....3
  - GEOS F225—Field and Computer Methods in Geology.....2
  - GEOS F338—Introduction to Geographic Information Systems.....3
  - Weather and Climate**
  - ATM F101X—Weather and Climate of Alaska.....4
  - GEOG F307—Weather and Climate.....3
  - Natural Resources**
  - GEOG F302—Geography of Alaska.....3
  - GEOG F402—Resources and Environment.....3
  - Evolutionary Processes**
  - GEOS F309—Tectonics.....3
  - GEOG F485—Mass Extinctions, Neocatastrophism, and the History of Life.....3
  - GEOS F486—Vertebrate Paleontology.....3
- Complete the requirements for a minor in secondary education (see page 157).....16
- Complete the additional requirements of the secondary education licensure program (see page 157)\*\*.....19
- Minimum credits required .....130

\* Students must earn a C- grade or better in each course.

\*\*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.

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 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

## EDUCATION

School of Education

907-474-7341

[www.uaf.edu/educ/](http://www.uaf.edu/educ/)

### B.A. Degree and Postbaccalaureate Licensure

Minimum Requirements for Degree: 121-128 credits;

Postbaccalaureate secondary licensure (Grades 7-12): 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 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, elementary education and secondary education; and postbaccalaureate programs are offered in elementary education, secondary education, counseling, curriculum and instruction, and special education.

The 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, school counselors and special education teachers. Courses are available on-site and by distance delivery through the Kuskokwim, Bristol Bay, Interior Alaska, 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 Certification and Advising Office.

Candidates for elementary and secondary licensures are required to have use of/own a laptop computer: elementary, before enrolling in ED F329 and F344; secondary, before the fall semester. Computers may be of any type but must have capacities that enable candidates to meet School of Education requirements. 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/](http://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 or Praxis Core Academic Skills for Educators (ASE) for this purpose. For additional information, see the Alaska State Department of Education and Early Development website.

### B.A. Degree, Elementary Education (K-8)

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. Completion of the B.A. in Education will meet the requirements for a major and minor.

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 or Praxis ASE scores (passing scores are not required until applying to the internship year) to the School of Education prior to enrolling in EDSE F316, and Praxis II (test 0014 or 5014) 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 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. 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.
2. Alaska Passing scores from the Praxis I or Praxis Core ASE exams in reading, writing and math, and Praxis II exam (test 0014 or 5014).
3. Two letters of reference that address qualifications and potential as a teacher.
4. A current and complete resume/curriculum vitae.
5. Two one-page essays on topics determined by the School of Education.
6. 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.
7. A one-to-two-page autobiographical sketch (appropriate for presenting to prospective principals and mentor teachers).
8. Extemporaneous writing sample. Contact the School of Education advising office for date, time and location information.
9. Evidence of successful experiences in teaching and learning situations.
10. Evidence of ability to work collaboratively and respectfully in cross-cultural contexts.
11. Completed Alaska Student Teacher Authorization Packet (including fingerprint cards and criminal background check. Forms are available from the School of Education).
12. Complete an interview, when requested.
13. 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 (Elementary)

1. Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete the following with a C or higher: ANTH/SOC F100X, HIST F100X, ECON/PS F100X, MATH F122X or MATH F151X, 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 earning a C or higher:\*
  - a. Complete the following mathematics requirements:\*
 

MATH F211—Mathematics for Elementary School Teachers I.....	3
MATH F212—Mathematics for Elementary School Teachers II.....	3
  - b. Complete one of the following:\*
 

GEOS F101X—The Dynamic Earth .....	4
GEOS F120X—Glaciers, Earthquakes and Volcanoes: Past, Present and Future .....	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
HIST F131—History of the U.S. ....	3
HIST F461W—History of Alaska (3)	
or HIST F115—Alaska, Land and Its People (3) .....	3
  - d. Complete the following humanities requirements:\*
    - i. ENGL F271—Introduction to Creative Writing — Fiction (3)
 

or ENGL F272—Introduction to Creative Writing — Poetry (3)	
or ENGL F273— Introduction to Creative Writing —Non-Fiction (3)	
or ENGL F314W,O/2—Technical Writing (3)	
or JRN F311W—Magazine Article Writing (3).....	3
    - ii. ED F486W,O—Media Literacy .....
 3 || ED/LING F100—Language, Linguistics and Education (3) |  |
| or LING F101—Nature of Language (3) ..... | 3 |
  - e. ED F329—Teaching with Technology\* .....
 3 |  - f. 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
EDSE F316—Introduction to Special Education for Elementary Classroom Teachers.....	3
EDSE F320—Adapting and Accommodating Instruction for Students with Disabilities.....	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
  - g. Complete the following professional internship year with integrated course work (first semester):\*
 

ED F411—Reading, Writing, Language Arts: Methods and Curriculum Development.....	3
ED F412—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 .....	2
ED F478—Math Methods and Curriculum Development .....	3
ED F479—Science Methods and Curriculum Development .....	3
  - h. Complete the following professional internship year with integrated course work (second semester):\*
 

ED F414—Art, Music and Drama in Elementary Classrooms.....	3
ED F417—Physical and Health Education for Elementary Teachers.....	3

ED F468O—Internship and Student Teaching .....	4
ED F469—Synthesizing the Standards II .....	2
ED F476—Assessment of Literacy Development.....	1
3. Minimum credits required .....	128

\* Students must earn a C grade or better in all required courses.

**B.A. Degree, Secondary Education (7-12)**

The requirements for a secondary school teaching certificate include completion of both a teaching major in an academic subject area appropriate to the secondary school and the professional education sequence. The degree is awarded as a B.A. with a double major. Upon declaration of a major in secondary education, students are assigned an advisor in the Education Department to plan the completion of the teaching major and the education sequence of courses.

The teaching major must be in an academic subject area approved for a State of Alaska secondary school teaching certificate and available as a B.A. degree: art, biology, chemistry, Earth science, economics, English, French, German, history, mathematics, political science or Spanish.

**Transition/Admission Requirements**

**Declaring a B.A. major in secondary 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. 15. Faculty in the School of Education consider multiple criteria in making valid and reliable judgments about each applicant's knowledge, skills, and professional characteristics prior to approval for the year-long internship in a classroom with secondary children.

Students must submit the following information to the School of Education by February 15:

1. Copies of transcripts from all institutions attended. Evidence of plan of completion of all B.A. degree in secondary education degree courses and completion of the majority of the content major requirements by August 1st (except for those required in the Professional Internship Year), with a minimum of a 2.75 overall GPA.
2. Three current letters of reference that address qualifications and potential as a teacher.
3. A personal statement of 500-800 words addressing motivation to enter the teaching profession, self-assessed qualifications to teach, experiences which have prepared candidate for teaching.
4. Alaska Passing scores from the Praxis I or Praxis Core ASE exams in reading, writing and math.
5. Alaska Passing scores from the Praxis II in the relevant content knowledge Praxis II Subject test for each content area the applicant expects to teach. Applicants applying to teach a World Language are required to submit Praxis II scores in the target language AND for the ACTFL Oral Proficiency Interview and Writing Test; Applicants must meet the Advanced Low rating for both tests.
6. Extemporaneous writing sample. Contact the School of Education advising office for date, time and location information.
7. All applicants will be required to interview with secondary faculty as part of the admission process.

To review the application review process, acceptance to the program information, and professional field experience, please refer to the secondary post-baccalaureate licensure program catalog information section.

**Major — B.A. Degree (Secondary)**

1. Complete the general university requirements (page 127).
  2. Complete the following B.A. degree and program (major) requirements earning a C or higher:\*
    - a. Complete the following education requirements:\*
 

EDSC F110—Becoming a Middle School/High School Teacher .....	1
EDSC F407—Developing Literacy in Content Areas .....	3
EDSC F414—Learning, Development and Special Needs Instruction (3)	
or EDSE F422—Curriculum , Management and Strategies II: High Incidence(3)	
or EDSE F482—Inclusive Classrooms for All Children (3) .....	3
EDSC F205—Introduction to Secondary Education (3)	
or EDSC F415—Foundations of Modern Educational Practices (3).....	(3)
EDSC F458—Classroom Organization and Management.....	3
    - b. Complete the following professional internship year with integrated course work:\*
 

EDSC F402—Methods of Teaching in the Secondary School.....	3
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)	
or EDSC F437—World Language Secondary Instruction and Assessment** (3).....	3
EDSC F442—Technology Applications in Education I .....	1
EDSC F443—Technology Applications in Education II.....	2
EDSC F457—Multicultural Education and School-Community Relations .....	4
EDSC F471—Secondary Teaching: School Internship I and Seminar .....	3
EDSC F472—Secondary Teaching: School Internship II and Seminar .....	3-9
  3. Complete requirements for a major in content area: art, biology, chemistry, Earth science, economics, English, foreign language (French, German or Spanish) history, mathematics or political science.
  4. Minimum credits required .....
- \* Students must earn a C grade or better in all required courses.  
\*\* Candidates must take the section or course that corresponds with their major teaching content area.

**Minor**

**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 with a C grade or higher:\*
 

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 .....
- \* Practicum may be required in each education course.  
\*\* Contact the School of Education's Certification and Advising Office for a list of approved elective courses.

## 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 F316 with grades of C or better will be allowed to substitute this sequence for ED F624, F625 and F626 in the postbaccalaureate elementary licensure program available on the UAF campus.

1. Complete the following with a C grade or higher:  
ED F110—Becoming a Teacher in the 21st Century..... 1  
ED F201—Introduction to Education ..... 3  
ED F204—Literature for Children..... 3  
EDSE F316—Introduction to Special Education for Elementary Classroom Teachers..... 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
2. Minimum credits required ..... 19  
\* *Practicum may be required in each education course.*

## Secondary\*

The secondary education minor is designed for students who are interested in pursuing careers as middle school and/or high school (grades 7-12) teachers. Students must complete all course work with grades of C or better.

1. Complete the following:  
EDSC F110—Becoming a Middle/High School Teacher ..... 1  
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) or EDSE F422—Curriculum and Strategies II: High Incidence (3) ..... 3
2. Minimum credits required ..... 16  
\* *Practicum may be required in each education course.*

## Secondary Postbaccalaureate Licensure Program

Program delivery is offered in Fairbanks and in areas served by the College of Rural and Community Development 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 postbaccalaureate 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](http://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 Postbaccalaureate 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. Candidates are expected to be proficient in Windows Office software including, but not limited to, word processing, spreadsheets, and presentation software.

## 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 postbaccalaureate 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 postbaccalaureate licensure program over a period of 24 months.

## Admissions Process and Requirements

Admission to the secondary postbaccalaureate 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 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 or Praxis Core ASE 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.pdf](http://www.eed.state.ak.us/TeacherCertification/pdf/Content_Area_Exams.pdf)).
  - b. World language exams: Applicants applying to teach a world language are required to submit Praxis II scores in the target language AND for the ACTFL Oral Proficiency Interview Test. Applicants must meet the Advanced Low rating ([www.languagetesting.com](http://www.languagetesting.com)). In the target language, write a 2-3 page, well-organized, coherent response to one of three prompts (contact School of Education Secondary Program for additional information).

7. Demonstrated evidence of content competency in one of the UAF-approved secondary endorsement areas: art, biology, Earth science, economics, English, French, German, political science, history, mathematics, physics and Spanish.
  - 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/](http://www.uaf.edu/educ/secondary/admissions/)).
9. Applicants must submit a placement packet. Contact the School of Education for specific guidelines. The School of Education determines placement approval, change or termination.
10. All applicants will be required to interview with secondary faculty as part of the admission process.

**Application Review Process**

Applications are due March 1 (summer or fall admissions) and October 15 (spring admissions), and are reviewed thereafter for admission. 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 postbaccalaureate 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 postbaccalaureate 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'
- some school districts require completion of district substitute training which may include a fee, a finger print card and AST background check; and

- State of Alaska Certificate of Authorization, fingerprint cards and money order in the amount of \$60 payable to the School of Education by June 1 (this fee is non-refundable once submitted to the state). 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.

**Professional Field Experiences**

The Secondary Postbaccalaureate 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 Postbaccalaureate 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.

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 Postbaccalaureate 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—Developing Literacy in the Content Areas.....3
  - EDSC F414—Learning, Development and Special Needs Instruction (3)
    - or EDSE F422—Curriculum, Management and Strategies II: High Incidence (3)
    - or EDSE F482—Inclusive Classrooms for All Children (3) .....3
  - EDSC F415—Foundations of Modern Educational Practices (3)
  - or EDSC F205—Introduction to Secondary Education (3).....3
  - 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)
    - or EDSC F437—World Language Secondary Instruction and Assessment (3) ..... 3\*

EDSC F442—Technology Applications in Education.....	1
EDSC F443—Technology Applications in Education II.....	2
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 postbaccalaureate 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.

### Admission Process and Requirements

Applicants will follow the admission process and requirements listed in the catalog (page 157) for the Secondary Postbaccalaureate 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.

For information on the application review process, acceptance to the program and professional field experience, please refer to the secondary postbaccalaureate licensure program toward M.Ed. section in the catalog.

### Program Requirements

1. Complete the following:	
ED F449—Elementary Art Methods .....	3
ED F452/ART F458—Elementary Internship .....	3
ED F453/ART F459—Secondary Internship .....	3
EDSC F402—Methods of Teaching in the Secondary School.....	3
EDSC F414—Learning, Development and Special Needs Instruction (3)	
or EDSE F422—Curriculum, Management and Strategies II: High Incidence (3)	
or EDSE F482—Inclusive Classrooms for All Children (3) .....	3
EDSC F415—Foundations of Modern Educational Practices (3)	
or EDSC F205—Introduction to Secondary Education (3).....	3
EDSC F436—Secondary Art Instruction and Assessment.....	3
EDSC F442—Technology Applications in Education I .....	1
EDSC F443—Technology Applications in Education II.....	2
EDSC F457—Multicultural Education and School-Community Relations .....	4
EDSC F458—Classroom Organization and Management.....	3
PSY F240—Psychology of Development (3)	
or PSY F245—Child Development (3) .....	3
2. Minimum credits required .....	34

## ELECTRICAL ENGINEERING

College of Engineering and Mines  
Department of Electrical and Computer Engineering  
907-474-7137  
<http://cem.uaf.edu/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 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 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 <http://cem.uaf.edu/ece/abet/>.

### Major — B.S. Degree

#### Concentrations: Communications, Computer Engineering, Power and Control

- Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete: MATH F251X, CHEM F105X and CHEM F106X or PHYS F213X.)\*
- Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree requirements, complete: MATH F252X, PHYS F211X and PHYS F212X.)\*
- Complete the following program (major) requirements:
 

EE F102—Introduction to Electrical and Computer 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 F253X—Calculus III.....	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
- Complete the Fundamentals of Engineering (FE) examination administered by the State of Alaska.
- 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 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.

## ENGLISH

College of Liberal Arts

Department of English

907-474-7193

[www.uaf.edu/english/](http://www.uaf.edu/english/)

### B.A. Degree

Minimum Requirements for Degree: 120 credits

The B.A. in English at UAF provides training in rhetorical dexterity, critical acumen and creative ingenuity — habits of mind that develop alongside intellectual inquiries concerning the production and reception of literary (and nonliterary) texts. As effective creators and thoughtful consumers of print and digital information, students learn how to identify critical methods, analyze language in varying historical, cultural and institutional contexts, and employ research in writing and speaking for a professional audience in the humanities.

The department has a particular strength in creative writing; students will have the opportunity to attend lectures and workshops with respected visiting writers and scholars as well as resident faculty. The English major is flexible and comprehensive enough to allow students to choose their own paths. Mindful of how language shapes problems, communities and environments, students are prepared for a variety of graduate programs and careers in diverse fields such as education, law and business.

#### Major — B.A. Degree

- Complete the general university requirements (page 127).
- Complete the B.A. degree requirements (page 132).
- Complete the following:
  - ENGL F310—Literary Criticism.....3
  - 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
  - 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
  - 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
- 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 or better in each course.

**Recommended courses for students interested in creative writing:**

- ENGL F371W—Topics in 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 F486W,O—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 postbaccalaureate one-year intensive teacher preparation program during their senior year.

**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/](http://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  
 Alaska Native Languages Program  
 907-474-7874  
[www.uaf.edu/anlc/](http://www.uaf.edu/anlc/)

**B.A. Degree**

Minimum Requirements for Degree: 120 credits

Eskimo languages are spoken by far northern people from the north-eastern 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 Alaska 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 127).
  2. Complete the B.A. degree requirements (page 132).
  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 or better in each course.

### Yup'ik Eskimo — B.A. Degree

1. Complete the general university requirements (page 127).
2. Complete the B.A. degree requirements (page 132).
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 or better in each course.

### Minor

1. Complete Eskimo electives .....15
2. Minimum credits required .....15

## FILM

College of Liberal Arts  
Department of Theatre and Film  
907-474-6590  
[www.uaf.edu/film/](http://www.uaf.edu/film/)

### B.A. Degree

Minimum Requirements for Degree: 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 127).  
*To graduate, all students must complete 39 upper-division credits. Some of these will be covered by the upper-division required courses for the film B.A., but not all of them. Film students will need to take upper-division electives (in film or other disciplines) to complete the upper-division requirement.*
2. Complete the B.A. degree requirements (page 132).
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 F289—Reel Workshop/Review.....0
    - FLM/JRN F290—Digital Video Editing.....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
    - FLM F389—Reel Workshop/Review.....0
    - FLM F489—Reel Workshop/Review.....0
  - b. Complete minimum of 6 credits from Film Studies, including at least one upper-division course:
    - FLM/JRN F105—History of the Cinema.....3
    - FLM/JRN F308—Film Criticism.....3
    - FLM/THR F334W—Movies and Films.....3
    - FLM/JRN/HIST F368—Topics in American Film History.....3
    - FLM/ANS F381—Alaska Natives in Film.....3
    - FLM/ENG F427—Topics in Film Studies.....3
    - FLM/FREN F433—Studies in French and European Cinema.....3
    - FLM/RUSS F484—Russian and Soviet Cinema.....3

- c. Complete a minimum of 9 credits from Film Production, including at least one upper-division course:
  - THR F121—Fundamentals of Acting.....3
  - FLM/JRN F251—Introduction to Video Production.....4
  - FLM/JRN F280—Video Storytelling.....3
  - FLM F298—Film Research .....3
  - FLM/THR F310—Acting for the Camera .....3
  - FLM/ART F371—Digital Imaging .....3
  - FLM F358—Lights, Camera, Audio.....3
  - FLM F418—Internship in Film Production ..... 1-6
  - FLM/THR F431—Advanced Film Production.....3
  - FLM F458—SFX Up Your Video.....3
  - FLM/ART/ANTH F460—Cross-Cultural Filmmaking .....3
  - FLM/THR F470—Advanced Film and Video Directing.....3
  - FLM /ART F472—3D Animation.....3
  - FLM/ART F475—Digital Video Compositing .....3
  - FLM/ENG/THR F488—Dramatic Writing .....3
  - FLM F497—Independent Study .....3
  - FLM F498—Film Research .....3
  - FLM F499—Film Thesis .....3
4. Complete a minimum of 6 credits from department-approved electives
5. 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
6. Minimum credits required .....120

\* Students must earn a C- grade or better in all courses required of the core and major.

Note: Courses used to satisfy the major cannot be used for the minor.

### Film Studies Minor

1. Complete the following:
  - FLM/ART/THR F172—Previsualization and Preproduction for Digital Cinema.....3
  - FLM/ENGL F217—Introduction to the Study of Film.....3
  - FLM/THR/F271—Let’s Make a Movie (3) or FLM/JRN F280—Video Storytelling (3) .....3
2. Complete a minimum of 9 credits from department-approved electives.
3. Minimum credits required .....18

## FISHERIES

School of Fisheries and Ocean Sciences  
 Fisheries Program  
 907-474-7289  
[www.sfos.uaf.edu/academics/](http://www.sfos.uaf.edu/academics/)

### B.A., B.S. Degree

Minimum Requirements for Degrees: 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 in state, federal and nongovernmental 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 in 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 (e.g., wildlife biology, natural resources management, business, rural and community development, journalism) 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 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 outlying areas. The undergraduate fisheries program is designed as a 2+2 program in which students may complete their first two years at any UAF, UAS or UAA campus and their last two years in either Fairbanks or Juneau as a UAF student. Students 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 sub-Arctic 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

#### Concentrations: Fisheries Business and Social Science, Rural and Community Development

1. Complete the general university requirements (page 127). To graduate, all students must complete 39 upper-division credits.
2. Complete the B.A. degree requirements (page 132).
3. Complete the following (major) requirements:\*
  - ENGL F314W/O—Technical Writing (3) or ENGL F414W—Research Writing (3) .....3
  - FISH F102—Fact or Fishin: Case Studies in Fisheries ..... 1
  - FISH F103—The Harvest of the Sea .....2
  - FISH F110—Fish and Fisheries in a Changing World.....3
  - FISH F261—Introduction to Fisheries Utilization .....3
  - FISH F288—Fish and Fisheries of Alaska.....3
  - FISH F411—Human Dimensions of Environmental Systems (3) or GEOG F312—People, Places, and Environment: Principles of Geography (3)\*\* or SOC F440—Environmental Sociology (3)\*\* .....3
  - FISH F487W/O—Fisheries Management .....3
  - FISH F490—Experiential Learning Internship ..... 1
  - STAT F200X—Elementary Probability and Statistics.....3
4. Complete one of the following concentrations:\*
  - Fisheries Business and Social Science:\***
    - ANTH F403W/O—Political Anthropology (3) or ANTH F428—Ecological Anthropology and Regional Sustainability (3).....3
    - BA F307—Introductory Human Resources Management (3) or BA F343—Principles of Marketing (3) .....3
    - BA F390—Organizational Theory and Behavior (3) or BA F330—The Legal Environment of Business (4) ..... 3-4
    - ECON F235—Introduction to Natural Resource Economics.....3
    - FISH F340—Seafood Business .....3
    - NRM F407—Environmental Law (3) or NRM F430—Resource Management Planning (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 F245—Fisheries Development in Rural Alaska (3)	
or RD F265—Perspectives on Subsistence in Alaska (3)	
or RD F300W—Rural Development in a Global Perspective (3)	
or RD F350O—Indigenous Knowledge and Community Research (3)	
or RD F351—Strategic Planning for Rural Communities (3)	
or ANS F350W,O—Cross Cultural Communication: Alaskan Perspectives (3)	
or ANS F401—Cultural Knowledge of Native Elders (3)** .....	3

### Rural and Community Development

RD F245—Fisheries Development in Rural Alaska (3)	
or RD F265—Perspectives on Subsistence in Alaska (3)	
or ANTH F428—Ecological Anthropology and Regional Sustainability (3).....	3
RD F300W—Rural Development in a Global Perspective .....	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 F450—Managing Rural Projects and Programs.....	3
RD F475W—Rural Development Senior Project.....	3

5. Minimum credits required .....120

\* Students must earn a C- grade or better in each course.

\*\* Students who take GEOG F312 or SOC F440, ANTH F403 or ANS F401 should be aware that these four courses require additional prerequisites that are not part of the Bachelor of Arts in fisheries degree program.

### Major — B.S. Degree

1. Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete MATH F232X or F251X.) To graduate, all students must complete 39 upper-division credits.	
2. Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree requirements, complete STAT F401 or STAT F402.)	
3. Complete the following:*	
BIOL F115X—Fundamentals of Biology I** .....	4
BIOL F116X—Fundamentals of Biology II** .....	4
BIOL F260—Principles of Genetics .....	4
BIOL F310—Animal Physiology (4)	
or BIOL F213X—Human Anatomy and Physiology I (4)	
and BIOL F214X—Human Anatomy and Physiology II (4).....	4-8
BIOL F371—Principles of Ecology.....	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 F102—Fact or Fishin: Case Studies in Fisheries .....	1
FISH F103—The Harvest of the Sea .....	2
FISH F110—Fish and Fisheries in a Changing World.....	3
FISH F261—Introduction to Fisheries Utilization.....	3
FISH F288—Fish and Fisheries of Alaska.....	3
FISH F427—Ichthyology(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)	
or GEOG F312—People, Places, and Environment: Principles of Geography ****(3) .....	3
or SOC F440—Environmental Sociology ****(3) .....	3
FISH F425—Fish Ecology (3)	
or FISH F426—Behavioral Ecology of Fishes (3)	
or FISH F428—Physiological Ecology of Fishes (3) .....	3

FISH F487W,O—Fisheries Management.....	3
FISH F490—Experiential Learning Internship .....	1
PHYS F103X—College Physics** (4)	
or PHYS F115X—Physical Science I** (4)	
or PHYS F211X—General Physics** (4) .....	4
STAT F200X—Elementary Probability and Statistics.....	3
STAT F401—Regression and Analysis of Variance*** (4)	
or STAT F402—Scientific Sampling*** (3) .....	3-4

- Complete 9 credits of electives\* from Fisheries, Biology, Marine Science and Limnology or Natural Resource Management (of which at least 5 credits must be upper-division).
- Complete 4 credits of electives\* from Chemistry, Geology or Physics.
- Additional electives\* to complete minimum credits required.

7. Minimum credits required .....120

\* Students must earn a C- grade 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.

\*\*\*\* Students who take GEOG F312 or SOC F440 should be aware that these two courses require additional prerequisites that are not part of the Bachelor of Science in fisheries degree program.

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

- Complete the following:  
FISH F101—Introduction to Fisheries (3)  
or NRM F101—Natural Resources Conservation  
and Policy (3) .....
- Students must take at least 6 additional credit hours designated FISH, with the exception of any FISH F492 courses.
- 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.....	3
BIOL F476—Ecosystem Ecology.....	3
BIOL F483—Stream Ecology.....	3
NRM F370—Introduction to Watershed Management.....	3

#### Fisheries Business Administration and Economics

ACCT F261—Principles of Financial Accounting.....	3
ACCT F262—Principles of Managerial Accounting.....	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 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

4. Minimum credits required .....	120
* Students must earn a C- grade or better in each course.	
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/](http://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 127).
2. Complete the B.S. degree requirements (page 132).
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 F151X—College Algebra for Calculus ..... 4
  - MATH F152X—Trigonometry..... 3
  - MATH F251X—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. 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
5. 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

**FOREIGN LANGUAGES**

College of Liberal Arts  
 Department of Foreign Languages and Literatures  
 907-474-7396  
[www.uaf.edu/language/](http://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 127).
2. Complete the B.A. degree requirements (page 132).
3. Complete one of the two following concentrations:\*

**Two Languages**

- 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**

- 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**

- 6. Minimum credits required .....130
- \* Students must earn a C- grade or better in each course.
- \*\* A student does not need to take MATH F151X and MATH F152X if the student completes MATH F251X with a C or better. Complete a B.S. degree mathematics elective for 3 credits if MATH F151X and MATH F152X 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 postbaccalaureate 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**

College of Natural Science and Mathematics  
 Department of Geosciences  
 907-474-7565  
[www.uaf.edu/cnsm/](http://www.uaf.edu/cnsm/)

**B.A., B.S. Degrees**

Minimum Requirements for Degrees: 120 credits

Geography is a broad, holistic study of the interactions among various natural/environmental, political, cultural and economic systems, and how those interactions create the world we see today at both local and global scales. Geography takes a synthesizing and inherently interdisciplinary approach to develop an integrated understanding of climate change, resource development, energy use and conservation, geopolitics, sustainable development, assessment of natural and human-caused environmental hazards, land-use change, regional conflicts, and economic and political developments all over the world. Geography also provides the framework for the integration of existing and emerging technologies such as GIS, remote sensing and geo-visualization into a broad range of academic and professional fields.

The geography B.A. and B.S. degrees are built upon a group of required courses that gives students a firm grounding in the fundamental components of the discipline, including global geographic perspectives, geography of the earth's natural systems, geography of human systems, geospatial sciences (GIS, remote sensing, geo-visualization), and the synthesis of these core perspectives through an integrating capstone experience.

Our students find work in such fields as mapping technology (GIS/cartography), regional planning, international relations, state and federal resource management, transportation planning, environmental impact assessment, tourism, and teaching. Many of our students go on to graduate study in geography, natural resources, environmental science or planning. The geography B.A. degree gives students a broad understanding of the interactions among the physical environments, economics, political events, and cultures of various regions of the world, and equips students with the ability to interpret contemporary geopolitical and environmental issues. The B.A. prepares students

for careers in management, policy, teaching, field-based research, regional planning, and a variety of private sector careers. The B.A. also provides an excellent foundation for graduate studies in a wide range of academic disciplines.

B.A. students are encouraged to coordinate minors, electives and internships to develop further expertise within a chosen region or topic, to take advantage of the considerable topical and regional expertise found throughout the UAF community, and also to underscore the important role other disciplines play within the field of geography.

Three specialized concentrations are available to students pursuing the B.S. degree: environmental studies; landscape analysis and climate change studies; and geospatial sciences.

The environmental studies concentration provides the foundation for understanding interactions between natural and human systems, analysis of environmental issues from an interdisciplinary geographic perspective, a diverse technical and scientific approach to environmental issues, and the ability to design balanced solutions to environmental problems.

The landscape analysis and climate change studies concentration integrates and synthesizes courses in geography, climate, geologic and biological sciences, as well as geospatial sciences. Students gain a sound and interdisciplinary understanding of how environmental change influences landscape patterns and human activity and welfare on both spatial and temporal scales. Senior capstone and internship courses offer integrating capstone experiences, enabling students to apply what they have learned in real-world settings.

The geospatial sciences concentration emphasizes skills and practices in geographic information systems, remote sensing, geovisualization and analysis of spatial patterns. Courses in GIS, remote sensing, GPS, map design, spatial statistics and computer programming are integrated with the geography foundation curriculum and courses in the natural sciences.

**Major — B.A. Degree**

- 1. Complete the general university requirements (page 127).
- 2. Complete the B.A. degree requirements (page 132).
- 3. As part of the baccalaureate core requirements, complete NRM F303X.\*
- 4. Complete the following:\*
  - 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 F490W,O—Geography Seminar.....3
  - NRM F338—Introduction to Geographic Information Systems.....3
- 5. 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 specialty 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
  - b. Physical geography: Complete one of the following:
    - GEOG F307—Weather and Climate .....3
    - GEOG F339—Maps and Landscape Analysis .....4
    - GEOG F412—Geography of Climate and Environmental Change ..3
    - GEOG F418—Biogeography .....3

- c. Human geography: Complete one of the following:
    - GEOG F405—Political Geography .....3
    - GEOG F420—Geopolitics of Energy.....3
    - NRM F403W/O—Environmental Decision Making.....3
  - d. Techniques: Complete one of the following:
    - GEOG F309—Digital Cartography and Geo-Visualization .....4
    - GEOG F430—Google Earth and Neogeography .....3
    - GEOG F483W—Research Design, Writing, and Presentation Methods .....3
    - GEOS F422—Geoscience Applications of Remote Sensing .....3
    - GEOS F458—Geoscience Applications of GPS and GIS .....3
    - NRM F366—Survey Research in Natural Resource Management ...3
    - NRM F435—GIS Analysis .....4
  - e. Geography electives: Complete two courses 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.
6. Minimum credits required .....120
- \* Students must earn a C grade or better in each course.
- 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 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 127).
2. Complete the B.S. degree requirements (page 132). As part of the B.S. degree requirements, complete MATH F232X or MATH F251X.\*
3. As part of the baccalaureate core requirements, complete NRM F303X; STAT F200X.\*
4. Complete the following:\*
  - 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 F490W/O—Geography Seminar .....3
  - NRM F338—Introduction to Geographic Information Systems .....3
5. Complete one of the following concentrations:\*
  - Environmental Studies**
    - a. As part of the baccalaureate core requirements, complete CHEM F105X.\*
    - b. As part of the B.S. degree requirements, complete BIOL F115X; BIOL F116X;
    - c. Complete the following:
      - GEOG F207—Research Methods and Statistics in Geography .....3
      - GEOG F307—Weather and Climate .....3
      - GEOG F339—Maps and Landscape Analysis .....4
      - GEOG F483W—Research Design, Writing and Presentation Methods .....3
    - d. Complete two courses from the following environmental studies electives:
      - GEOG F412—Geography of Climate and Environmental Change ..3
      - GEOG F488—Geographic Assessment and Prediction of Natural Hazards .....3
      - NRM F403W/O—Environmental Decision Making.....3
      - NRM F407—Environmental Law .....3

- e. Complete three courses from the following environmental system electives:
  - ANTH F428—Ecological Anthropology and Regional Sustainability .....3
  - BIOL F371—Principles of Ecology .....4
  - BIOL/NRM F277—Introduction to Conservation Biology.....3
  - GEOG F418—Biogeography .....3
  - GEOS F304—Geomorphology .....3
  - NRM F375—Natural Resource Ecology .....3
  - NRM F380W—Soils and the Environment .....3
- f. Complete one of the following environmental management electives:
  - NRM F365—Principles of Outdoor Recreation Management.....3
  - NRM F370—Introduction to Watershed Management.....3
  - NRM F430—Resource Management Planning.....3
  - NRM F464—Wilderness Management .....3
  - NRM F480—Soil Management for Quality and Conservation.....3
- g. Complete one of the following techniques electives:
  - GEOG F309—Digital Cartography and Geo-Visualization .....4
  - GEOS F422—Geoscience Applications of Remote Sensing .....3
  - GEOS F458—Geoscience Applications of GPS and GIS .....3
  - NRM F366—Survey Research in Natural Resource Management ...3
  - GEOG F435—GIS Analysis .....4

### Landscape Analysis and Climate Change Studies

- a. As part of the baccalaureate core requirements, complete CHEM F105X\*.
- b. As part of the B.S. degree requirements, complete BIOL F115X; BIOL F116X.
- c. Complete the following processes requirements (geomorphology, climate, ecology, systems):
  - BIOL F371—Principles of Ecology .....4
  - GEOG F307—Weather and Climate .....3
  - GEOG F412—Geography of Climate and Environmental Change .....3
  - GEOG F418—Biogeography .....3
  - GEOS F304—Geomorphology .....3
- d. Complete one of the following processes electives:
  - NRM F370—Watershed Management.....3
  - NRM F380W—Soils and the Environment .....3
  - or a processes-oriented content course approved by a geography faculty advisor.
- e. 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 .....4
  - NRM F435—GIS Analysis (4)
    - or GEOS F458—Geoscience Application GPS and GIS (3).....3-4
- f. Complete at least one of the following patterns electives:
  - GE F471—Remote Sensing for Engineering .....3
  - GEOS F422—Geoscience Applications of Remote Sensing .....3
  - NRM F641—Remote Sensing Applications in Natural Resources...4
- g. Complete the following capstone requirement (program synthesis):
  - GEOG F483W—Research Design, Writing, and Presentation Methods .....3

### Geospatial Sciences

- a. Complete the following:
  - CS F103—Introduction to Computer Programming.....3
  - GEOG F300—Internship in Geography (in GIS) .....3
  - GEOG F339—Maps and Landscape Analysis .....3-4
  - NRM F435—GIS Analysis .....4
- b. Complete at least two remote sensing electives:
  - GE F471—Remote Sensing for Engineering .....3
  - GEOS F422—Geoscience Applications of Remote Sensing .....3
  - NRM F641—Remote Sensing Applications in Natural Resources...4

- c. Complete at least two 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
  - d. Complete at least two landscape electives:
    - BIOL F469O—Landscape Ecology and Wildlife Habitat .....3
    - GEOS F304—Geomorphology .....3
    - GEOS F408—Photogeology .....2
    - GEOS F430—Statistics and Data Analysis in Geology .....3
  - 6. Minimum credits required .....120
    - \* Students must earn a C grade or better in each course.
    - \*\* 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**

**Geography**

- 1. Complete the following:
  - GEOG F101—Expedition Earth: Introduction to Geography .....3
  - GEOG F111X—Earth and Environment: Elements of Physical Geography .....4
  - GEOG electives .....9
- 2. Minimum credits required .....16
  - \* Students must earn a C grade or better in each course.

**Geographic Information Systems**

- 1. Complete the following:\*
  - GEOG F111X—Earth and Environment: Elements of Physical Geography .....4
  - GEOG F309—Digital Cartography and Geo-Visualization .....4
  - GEOS F458—Geoscience Applications of GPS and GIS .....3
  - NRM F338—Introduction to Geographic Information Systems .....3
- 2. Complete one of the following:\*
  - GEOG F300—Internship in Geography (in GIS) (3) or any GIS-related course approved by advisor (3) .....3
  - GEOG F430—Google Earth and Neogeography .....3
  - NRM F369—GIS and Remote Sensing for Natural Resources .....3
  - NRM F435—GIS Analysis .....4
- 3. Minimum credits required .....17
  - \* Students must earn a C grade or better in each course.

**GEOLOGICAL ENGINEERING**

College of Engineering and Mines  
 Department of Mining and Geological Engineering  
 907-474-7388  
<http://cem.uaf.edu/mingeo/>

**B.S. Degree**

Minimum Requirements for Degree: 133 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 employed 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://cem.uaf.edu/mingeo/abet/>.

**Major — B.S. Degree**

1. Complete the general university requirements (page 127). As part of the core curriculum requirements, complete: MATH F251X\*, CHEM F105X\* and CHEM F106X\*.
  2. Complete the B.S. degree requirements (page 132). As part of the B.S. degree requirements, complete: MATH F252X\*, PHYS F211X\* and PHYS F212X\*.
  3. Complete the following program (major) requirements:\*
    - ES F208—Mechanics .....4
    - ES F331—Mechanics of Materials .....3
    - ES F341—Fluid Mechanics .....4
    - ES F346—Basic Thermodynamic .....3
    - GE F101—Introduction to Geological Engineering .....1
    - GE F261—General Geology for Engineers .....3
    - GE F365—Geological Materials Engineering .....3
    - GE F371—Remote Sensing for 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 F480W—Senior Design .....3
    - GEOS F213—Mineralogy .....4
    - GEOS F214—Petrology and Petrography .....4
    - GEOS F314—Structural Geology .....4
    - GEOS F320—Sedimentology for Geological Engineers .....3
    - MATH F253X—Calculus III .....4
    - MATH F302—Differential Equations .....3
    - MIN F202—Mine Surveying .....3
    - MIN F225—Quantitative Methods in Mining Engineering .....2
    - MIN F370—Rock Mechanics .....3
    - MIN F408O—Mineral Valuation and Economics .....3
    - Technical electives\*\* .....6
- Highly recommended technical electives:**
- CE F341—Environmental Engineering .....4
  - CE F344—Water Resources Engineering .....3
  - CE F422—Foundation Engineering .....3
  - CE F424—Introduction to Permafrost Engineering .....3
  - CE F442—Environmental Engineering Design .....3
  - CE F603—Arctic Engineering .....3
  - ESM F422—Engineering Decisions .....3
  - GE F322—Erosion Mechanics and Conservation .....3
  - GE F376—GIS Applications in Geological and Environmental Engineering .....3
  - GE F384—Engineering Geology of Alaska .....4

GE F400—Geological Engineering Internship.....	1-3
GE F422—Soil Physics.....	3
GE F430—Geomechanical Instrumentation.....	3
GE F435—Exploration Design.....	3
GE F440—Slope Stability.....	3
GE F441—Geohazard Analysis.....	3
GE F445—Design of Earth Dams and Embankments.....	3
MIN F443—Principles and Applications of Industrial Explosives.....	3
MIN F482—Computer-Aided Mine Design — VULCAN.....	3
NRM F435—GIS Analysis.....	4
PETE F302—Well Logging.....	3
PETE F407—Petroleum Production Engineering.....	3
PETE F426—Drilling Engineering.....	3

4. Complete the Fundamentals of Engineering (FE) examination administered by the State of Alaska.

5. Minimum credits required .....133

\* Students must earn a C- grade or better in each of these courses.

\*\* Technical elective credits must contain engineering design and be selected by the student from the list of approved technical electives from the geological engineering program in conference with his or her advisor and approved by the department.

## GEOSCIENCE

College of Natural Science and Mathematics  
Department of Geosciences  
907-474-7565  
[www.uaf.edu/geology/](http://www.uaf.edu/geology/)

### B.S. Degree

Minimum Requirements for Degree: 120 credits

Graduates in geoscience have broad backgrounds in the earth sciences and firm foundations in mathematics, physics and chemistry. Four concentrations are available to allow students to pursue their own emphasis: geology, paleontology, geospatial science and geophysics. The concentrations allow students to focus earlier in their studies but are flexible enough to allow students to pursue their own interests in the junior and senior years. All of the concentrations are designed to prepare students for industry jobs in oil, mining and environmental consulting; jobs with agencies such as U.S. Geological Survey, NASA, Alaska Division of Geological and Geophysical Surveys; or graduate studies.

The geology concentration offers students a sound background in a spectrum geological disciplines with an emphasis on current field mapping techniques essential to exploration and research. The paleontology concentration is designed to provide students with the skills necessary to locate, excavate, interpret and curate specimens for museums, agencies or universities. The geospatial sciences concentration focuses on the principles, techniques and applications of remote sensing, GIS and GPS to prepare students for careers that require geospatial data analysis and visualization. The geophysics concentration challenges students to use physics in understanding geoscience concepts, emphasizing applications in seismology, volcanology and glaciology in the context of the Alaskan landscape. This concentration is designed to prepare students for graduate work in geophysics and environmental engineering fields or other disciplines that use geophysical tools such as ground-penetrating radar or exploration seismology.

### Major — B.S. Degree

1. Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete MATH F251X and CHEM F105X.)

2. Complete the following:*	
GEOS F101X—The Dynamic Earth.....	4
GEOS F112X—The History of Earth and Life.....	4
GEOS F309—Plate Tectonics.....	3
3. Complete one of the following concentrations:*	
<b>Geology</b>	
a. Complete the following:	
CHEM F106X—General Chemistry II.....	4
PHYS F103X—College Physics I.....	4
PHYS F104X—College Physics II.....	4
b. Complete the following (major) requirements:*	
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
STAT F200X—Elementary Probability and Statistics (3) or STAT F300—Statistics (3).....	3
c. Complete 12 additional credits of upper-division GEOS courses or other upper-division courses approved by the undergraduate advisor* including one O (oral-intensive) course from any department.	
<b>Paleontology</b>	
a. Complete the following:	
CHEM F106X—General Chemistry II.....	4
PHYS F103X—College Physics I.....	4
b. Complete the following (major) requirements:*	
GEOS F213—Mineralogy.....	4
GEOS F214—Petrology and Petrography.....	4
GEOS F225—Field and Computer Methods in Geology.....	2
GEOS F314—Structural Geology.....	4
GEOS F322—Stratigraphy and Sedimentation.....	4
GEOS F351W—Field Geology**.....	8
GEOS F430—Statistics and Data Analysis in Geology.....	3
STAT F200X—Elementary Probability and Statistics (3) or STAT F300—Statistics (3).....	3
GEOS F315W—Paleobiology and Paleontology.....	4
GEOS F317O—Paleontological Research and Laboratory Methods.....	2
c. Complete at least two of the following electives:*	
GEOS F453—Palynology and Paleopalynology.....	4
GEOG F485—Mass Extinctions, Neocatastrophism and the History of Life.....	3
GEOS F486—Vertebrate Paleontology.....	3
GEOS F488—Undergraduate Research.....	2
d. Complete the requirements for a minor in biological sciences.....	20
<b>Geospatial Sciences</b>	
a. Complete the following:	
CHEM F106X—General Chemistry II.....	4
PHYS F103X—College Physics I.....	4
PHYS F104X—College Physics II.....	4
b. Complete the following (major) requirements:*	
GEOS F213—Mineralogy.....	4
GEOS F214—Petrology and Petrography.....	4
GEOS/GEOG F222—Fundamentals of Geospatial Sciences.....	3
GEOS F225—Field and Computer Methods in Geology.....	3
GEOS F304—Geomorphology.....	3
GEOS F314—Structural Geology.....	4
GEOS F322—Stratigraphy and Sedimentation.....	4
GEOS F351W—Field Geology**.....	8
GEOS F430—Statistics and Data Analysis in Geology.....	3

- STAT F200X—Elementary Probability and Statistics (3)  
or STAT F300—Statistics (3) .....3
- c. Complete at least two of the following remote sensing electives:\*
  - GEOS F408—Photogeology .....2
  - GEOS F422—Geoscience Applications of Remote Sensing .....3
  - GEOS F488—Undergraduate Research .....2
  - NRM F641—Remote Sensing of Natural Resources .....4
- d. Complete at least two of the following GIS electives:\*
  - GEOG F309—Digital Cartography and Geo-Visualization .....4
  - GEOG F435—GIS Analysis .....3
  - GEOS F458—Geoscience Applications of GPS and GIS .....3
  - NRM F338—Introduction to GIS .....3
- e. Complete 9 additional credits of upper-division GEOS courses or other upper-division courses approved by the undergraduate advisor\* including one O (oral-intensive) course and one additional W (writing-intensive) course from any department.

**Geophysics**

- a. Complete the following:\*
  - GEOS F262—Rocks and Minerals .....3
  - GEOS F318—Solid Earth Geophysics .....3
  - GEOS F406—Volcanology .....3
  - GEOS F431—Foundations of Geophysics .....4
  - GEOS F475W,O—Presentation Techniques in the Geosciences .....2
  - GEOS F477O—Ice in the Climate System .....3
  - GEOS F488—Undergraduate Research .....2
  - MATH F252X—Calculus II .....4
  - MATH F253X—Calculus III .....4
  - MATH F302—Differential Equations .....3
  - MATH F314—Linear Algebra .....3
  - PHYS F211 and PHYS F212—General Physics .....8
  - PHYS F213X—Elementary Modern Physics .....4
  - PHYS F220—Introduction to Computational Physics .....4
- b. Complete at least three of the following science and engineering electives:\*
  - ES F331—Mechanics of Materials .....3
  - ES F341—Fluid Mechanics .....4
  - GEOS F314—Structural Geology .....4
  - GEOS F322—Stratigraphy and Sedimentation .....4
  - GEOS F422—Geoscience Applications of Remote Sensing .....3
  - ME F441—Heat and Mass Transfer .....3
  - PHYS F301—Introduction to Mathematical Physics .....4
  - PHYS F313—Thermodynamics and Statistical Physics .....4
  - PHYS F341—Classical Physics I: Particle Mechanics .....4
- c. Complete 3 additional upper-division GEOS credits or other upper-division courses as approved by the undergraduate advisor\*
- d. Complete one W (writing-intensive) course approved by the undergraduate advisor.\*

4. Minimum credits required .....120

\* Students must earn a C- grade or better in each of these courses.  
 \*\* GEOS F351 is offered at UAF during the summer of odd-numbered years. Students may substitute a 6-credit field geology class at another institution. The geology and geophysics undergraduate advisor will assist students in placement in an approved field geology class.

**Minors**

**Geology**

- 1. Complete the following:
  - GEOS F101X—The Dynamic Earth .....4
  - GEOS F112X—The History of Earth and Life .....4
- 2. Complete 12 additional credits of GEOS courses as approved by the undergraduate geoscience advisor .....12
- 3. Minimum credits required .....20

**Paleontology**

- 1. Complete the following:
  - GEOS F101X—The Dynamic Earth .....4
  - GEOS F112X—The History of Earth and Life .....4

- 2. Complete three of the following:
  - GEOS F315W—Paleobiology and Paleontology .....4
  - GEOS F317O—Paleontological Research and Laboratory Methods .....2
  - GEOS F322—Stratigraphy and Sedimentation .....4
  - GEOS F453—Palynology and Paleopalynology .....4
  - GEOS F485—Mass Extinctions, Neocatastrophism and the History of Life .....3
  - GEOS F486—Vertebrate Paleontology .....3
- 3. Minimum credits required ..... 16-20

**Geospatial Sciences**

- 1. Complete the following:
  - GEOS F101X—The Dynamic Earth .....4
  - GEOS F112X—The History of Earth and Life .....4
  - GEOS/GEOG F222—Fundamentals of Geospatial Sciences .....3
  - GEOS F225—Field and Computer Methods in Geology .....2
  - GEOS F422—Geoscience Applications of Remote Sensing .....3
  - GEOS F458—Geoscience Applications of GPS and GIS .....3
- 2. Minimum credits required: .....19

**Geophysics**

- 1. Complete the following:
  - GEOS F101X—The Dynamic Earth .....4
  - GEOS F112X—The History of Earth and Life .....4
  - GEOS F318—Solid Earth Geophysics .....3
  - GEOS F406—Volcanology .....3
  - GEOS F431—Foundations of Geophysics .....4
  - GEOS F477O—Ice in the Climate System .....3
- 2. Minimum credits required: .....21

**GLOBAL STUDIES**

College of Liberal Arts  
 907-474-7231  
[www.uaf.edu/cla/](http://www.uaf.edu/cla/)

**Minor Only**

This interdisciplinary program enhances students' understanding of issues resulting from an increasingly interdependent world and giving students an opportunity to broaden their horizons beyond their chosen major and achieve a more integrated vision of contemporary global problems, alternative concepts of global society, and strategies for moving toward a more just and humane world order.

The program's flexibility allows students, in consultation with their advisor, to select an array of courses and co-curricular experiences that best complement their majors as well as their goals for their careers and/or postbaccalaureate education.

Global studies students are encouraged to pursue opportunities for study abroad and foreign language acquisition as part of their minor requirements. Working with their advisor and the UAF Office of International Programs and Initiatives, global studies students may discover ways to build on their UAF course work and satisfy a significant portion of their global studies minor requirements at a foreign college or university.

**Minor**

- 1. Complete one entry-level course from among the following:
  - ANTH F245—Culture and Global Studies .....3
  - ENGL F218—Themes in Literature: Colonial and Post-Colonial Literature .....3
  - ENGL F280—Colonial and Post-Colonial Literature .....3
  - GEOG F203—World Economic Geography .....3
  - JUST F201—Dispute Resolution and Restorative Processes .....3
  - LING F216—Languages of the World .....3
  - PS F202—Democracy and Global Society .....3

2. Complete four different courses from the following (12 credits) with no more than two courses (6 credits) from the same department:
  - ANTH/RD F315—Tribal People and Development .....3
  - ANTH F428—Ecological Anthropology and Regional Sustainability .....3
  - ANTH/WGS F445—Gender in Cross-Cultural Perspective .....3
  - ANTH F446—Economic Anthropology.....3
  - BIOL F476—Ecosystem Ecology.....3
  - COMM F330—Intercultural Communication .....3
  - COMM F353—Conflict, Mediation and Communication.....3
  - ENGL F380—Topics in Colonial and Post-Colonial Literature .....3
  - GEOG/NRM F338—Introduction to Geographic Information Systems.....3
  - HIST F316—Europe since 1945.....3
  - HIST F411—Environmental History.....3
  - JUST F401—Cross Cultural Conflict Analysis and Intervention .....3
  - JUST F405—Clinic in Mediation, Conferencing, and Circle Practices.....3
  - PHIL/PS F472—Ethics and International Affairs .....3
  - PS F201—Comparative Politics.....3
  - PS F203—Peace, War and Security.....3
  - PS F322O—International Law and Organization .....3
  - PS F323—International Political Economy.....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
  - RD F300W—Rural Development in a Global Perspective .....3
  - SOC F405O—Social Movements and Social Change.....3
  - SOC F460—Global Issues in Sociological Perspective .....3

3. Complete a variable credit civic engagement/internship project working collaboratively with one of the faculty in the student’s primary course interest. The number of credits will be determined by the student’s advisor based on the number of hours worked in the nature of the academic component of the internship or project ... 1-3

4. Minimum credits required ..... 16-18

*Note: The Program in Global Studies also strongly encourages students to study abroad for at least one semester, and to work toward fluency in a second language.*

*Because of the flexibility of the program and the internship requirement, it will be important for students to work closely with an advisor familiar with the program. Please contact the Program Coordinator with any questions you may have about the program.*

For more information and advising:

Peter A. DeCaro  
 Program Coordinator  
 907-474-6799  
 padecaro@alaska.edu

## HISTORY

College of Liberal Arts  
 Department of History  
 907-474-7126  
[www.uaf.edu/history/](http://www.uaf.edu/history/)

### B.A. Degree

Minimum Requirements for Degree: 120 credits

The History Department prepares students to critically analyze and interpret cultural heritage, the great problems that have faced humans throughout history and how we have sought to solve them.

If you enjoy studying and researching major cultural, social, economic and political events of the past, then a B.A. in history may be for you. Through our program you will develop skills in oral and written presentation, research and critical thinking, and gain a greater awareness of the human condition. Our students also acquire an appreciation of the complexity of the discipline, an understanding that

historical narratives are constructed, contested and always changing, and the recognition that there are varied perspectives on the past.

As liberal arts majors, history prepares students for a multitude of careers in the public, private and nonprofit sectors. History graduates may find work as educators, researchers and analysts, public relations representatives, advocates, and businessmen and -women.

### Major — B.A. Degree

1. Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete HIST F100X.)\*
2. Complete the B.A. degree requirements (page 132).
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 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

## HOMELAND SECURITY AND EMERGENCY MANAGEMENT

School of Management  
 Department of Homeland Security and Emergency Management  
 907-474-7461  
[www.uaf.edu/som/degrees/undergraduate/bem/](http://www.uaf.edu/som/degrees/undergraduate/bem/)

### B.E.M. Degree

Minimum Requirements for Degree: 120 credits

In a post-9/11 environment, the challenges faced by emergency management and homeland security professionals have reached unprecedented levels. As we experience an increase in the frequency, complexity and severity of manmade, natural and technological disasters, ever-increasing demands have been placed on emergency professionals and the skill sets required to succeed. Today, more so than ever before, the integration of federal, state and local resources,

communication and collaboration has become the norm. Issues concerning terrorism, critical infrastructure protection/management, risk, business continuity, fire, hazardous materials, law enforcement, public health and safety are no longer domains unto themselves but part of the new fabric of this highly integrated and complex environment. Consequently, more is now required and expected of our traditional first responders and those charged with the leadership and management roles of these individuals and organizations.

The Bachelor of Emergency Management program focuses on developing skills to lead and manage individuals and organizations in an increasingly complex environment. The program builds upon an individual's technical capabilities derived from education, training and experience in fire, law enforcement, military or other related fields. This technical expertise is then combined with a curriculum of business administration, emergency management and homeland security instruction. This focus gives students the operations management knowledge to lead and manage individuals, departments or agencies on a day-to-day basis as well as during times of crisis at the local, regional, national or international levels. This degree is built specifically to meet the needs of those who provide administrative oversight, supervisory control, leadership or management roles within the fields of fire, law, emergency medical services, and security (to include other related fields) at the local, state, federal and international levels. The degree also provides those at the responder level 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 127).
2. Complete the B.E.M. degree requirements (page 133)\*.
  - a. Complete 33 credits of major requirements from UAF HSEM lower-division courses, the emergency services A.A.S. degree from UAF or any regionally accredited institution within these subject areas: emergency/para-medical, environmental health and safety, fire science, law enforcement, network/cyber security, process technology, public safety or wildland fire, or commensurate military credit from the above subject areas as approved by the program director.
  - b. Complete the following:\*
 

BA F307—Introduction to Human Resources Management.....	3
BA F390—Organizational Theory and Behavior.....	3
BA F457—Training and Management Development .....	3
ECON F201—Principles of Economics I: Microeconomics.....	3
ENGL F314W,O/2—Technical Writing .....	3
HSEM/ACCT F271—Fiscal Management for Emergency Management Operations.....	3
  - c. Complete 6 credits from the following:
 

URSA—any course	
HSEM—any course not counted in a) above or in d) below	
STAT F200X—Elementary Probability and Statistics.....	3
PSY/SOC F250—Introductory Statistics for Social Sciences.....	3
JUST F222—Research Methods .....	3
PS F203—Peace, War and Security.....	3
BA F330—Legal Environment of Business.....	4
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
GEOS F380—Geological Hazards .....	3
  - d. Complete the following (major) courses:\*
 

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 F445W,O/2—Business Continuity and Crisis<br>Management..... | 3 |
| HSEM F456W—Leadership in Dangerous Contexts .....                | 3 |
- e. Complete one of the following concentrations:
    - Homeland Security**  
Complete the following:
 

HSEM F406—Comparative Homeland Security.....	3
HSEM F408—Homeland Defense and Security .....	3
    - Emergency Management**  
Complete the following:
 

HSEM F405—Introduction to Emergency Management Exercise Design.....	3
HSEM F407—Comparative Emergency Management.....	3
    - Fire Administration**  
Complete the following:
 

HSEM F439—Supervising Emergency Services .....	3
HSEM F440—Advanced Principles of Fire Service Administration .....	3
  3. Minimum credits required .....120
    - \* Students must earn a C- grade 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 or two half oral-intensive course(s).

**Minor**

**Emergency Management**

1. Complete the following:\*
 

HSEM F301—Principles of Homeland Security and Emergency Management.....	3
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2. Complete three of the following:\*
 

HSEM F412—Emergency Planning and Preparedness .....	3
HSEM F423—Disaster Response Operations and Management.....	3
HSEM F434—All Hazards Risk Analysis .....	3
HSEM F445W, O/2—Business Continuity and Crisis Management.....	3
HSEM F456W—Leadership and Influence During Crisis .....	3
3. Complete at least 3 credits from the following:\*
 

BA F317W—Employment Law .....	3
BA F452W—Internship in Emergency Management.....	3
BA F490—Services Marketing .....	3
COMM F335O—Organizational Communications .....	3
COMM F353—Conflict, Mediation, and Communication.....	3
GEOS F120X—Glaciers, Earthquakes and Volcanoes: Past, Present and Future.....	4**
GEOS/GEOG F222—Fundamentals of Geospatial Sciences (3) or course(s) pre-approved by the program director.....	3
4. Minimum credits required .....15
  - \* Students must earn a C- grade or better in each course.
  - \*\* May be used to satisfy half of the core science requirement.

**Military Security Studies**

1. Complete 10 credits of MILS electives, as approved by the program director, Homeland Security and Emergency Management.\*
2. Complete two of the following:\*
 

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 F445W, O/2—Business Continuity and Crisis Management .....	3
HSEM F456W—Leadership and Influence During Crisis .....	3
MILS F442—History of the American Military (3) or course(s) pre-approved by the program director.....	3
3. Minimum credits required .....16
  - \* Students must earn a C- grade or better in each course.

## INTERDISCIPLINARY STUDIES

Office of Interdisciplinary Programs

907-474-7716

[www.uaf.edu/gradsch/classes/interdisciplinary-program/](http://www.uaf.edu/gradsch/classes/interdisciplinary-program/)

### B.A., B.S., B.T. Degrees

Minimum Requirements for Degrees: 130 credits

The 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 233 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/](http://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 Academic Advising Center at 907-474-6396 or 888-823-8780 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.
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 general studies 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
7. Minimum credits required .....130

### Minor

1. Contact the Academic Advising Center at 907-474-6396 or 888-823-8780 for materials and procedures.
2. Prepare and submit a draft declaration of interdisciplinary minor form and submit it electronically to the Academic Advising Center at [www.uaf.edu/advising/](http://www.uaf.edu/advising/) or in person at 510 Gruening Building. Include a title for the minor, briefly describe the body of knowledge and skills intended to fulfill the minor, including courses specifying the knowledge and skills relevant to the minor title. For example: Food Science minor, including relevant course work from transfer credits in Food Science from a regionally accredited university, as well as credits from chemistry, fisheries or natural resources management, and biological sciences. An interdisciplinary minor cannot be titled the same as an existing minor and must demonstrate a cohesive body of knowledge skills. The approved title will appear on the student's transcript.
3. Three faculty members approved by the dean of General Studies will serve as the interdisciplinary minor committee. This committee will ensure that an appropriate and cohesive body of knowledge and skills is addressed in the planned minor and that the interdisciplinary minor does not overlap with an existing minor, and will discuss alternatives with the student as needed.
4. Minimum credits required ..... 18

## JAPANESE STUDIES

College of Liberal Arts

Department of Foreign Languages and Literatures

907-474-7396

[www.uaf.edu/language/](http://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 127).
2. Complete the B.A. degree requirements (page 132).
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 or better in each course.
    - \*\* After completion of language training through the 200 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 F100 level or above.....3
  - Japanese course credits at the F200 level or above.....12
2. Minimum credits required .....15

**JOURNALISM**

College of Liberal Arts  
 Department of Journalism  
 907-474-7761  
[www.uaf.edu/journal/](http://www.uaf.edu/journal/)

**B.A. Degree**

Minimum Requirements for Degree: 120 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 KUAC, a public television and public radio station, student-owned FM radio station KSUA, and the *Sun Star*, 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 digital newsroom and photography lab, a digital audio bay, a digital video editing/advanced digital printing lab, two wet photography labs and a photography studio. The department is accredited by the Accrediting Council on Education in Journalism and Mass Communication.

**Major — B.A. Degree**

1. Complete the general university requirements (page 127).
2. Complete the B.A. degree requirements. (See page 132. As part of the B.A. degree requirements, complete HIST F132\*.)
3. Complete the following program (major) requirements: \*
  - JRN F101—Media and Culture.....3
  - JRN F202—News Writing for the Media .....3
  - JRN F251—Introduction to Video Production .....4
  - JRN F302W—Reporting.....3
  - JRN F400—Professional Media Internship.....3
  - JRN F404—Photojournalism I .....3
  - JRN F413—Mass Media Law and Regulation .....3
  - JRN F421—Journalism in Perspective.....3
  - JRN F432W—Public Relations Techniques .....3
  - JRN F454O—Newscast.....3
  - JRN F490—Online Publication: “Extreme Alaska” .....3
4. Complete one of the following four courses:.....
  - JRN F215—Radio Production .....3
  - JRN F323—Editing for Journalists .....3
  - JRN F406—Photojournalism II.....3
  - JRN F480—Documentary Filmmaking .....3
5. Complete one course from the list of approved journalism electives: \*
  - JRN F204/ART F284—Basic Digital Photography.....3
  - JRN F215—Radio Production .....3
  - JRN F240—Foreign Corresponding.....3
  - JRN F250—Website Design .....3
  - JRN/FLM 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/WGS F380O—Women, Minorities and the Mass Media.....3
  - JRN F390—New Media Toolkit.....3
  - JRN F402/ART F483—Advanced Photography.....3
  - JRN F405/ART F465—Advanced Photography Seminar .....3
  - JRN F406—Photojournalism II.....3
  - JRN F407/ART F487—Digital Darkroom.....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 F454O—Newscast.....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
  - JRN F498—Undergraduate Research.....3
6. Complete credits outside of Journalism. To assure the journalist a broad liberal arts education, 80 credits must be taken from outside of journalism, 65 of which should be from any of these departments; AKNP, ALST, ANL, ANS, ANTH, ART, ASLE, ATM, BIOL, CHEM, COMM, ECON, ENGL, ENVE, ESK, FISH, FL, FREN, GEOG, GEOS, GER, HIST, HONR, HUM, JPN, JUST, LING, LS, MATH, MSL, MUS, NORS, NRM, PHIL, PHYS, PS, PSY, RUSS, SOC, SPAN, STAT, THR and WGS
7. Minimum credits required .....120
  - \* Students must earn a C- grade or better in each course in the major requirements and any course offered through the Department of Journalism.

## Minor\*

- Complete the following:\*  
JRN F101—Media and Culture .....3  
JRN F202—News Writing for the Media .....3  
Approved JRN electives .....9  
(Any journalism course taken for the major serves as an approved elective for the minor. Other approved electives for the minor are the same as those listed for the major.)
  - Minimum credits required .....15
- \* Students must earn a C- grade 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/](http://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 both the B.A. degree in justice and the M.A. degree in administration of justice reflect that dichotomy. Consequently, students explore theoretical models associated with different aspects of the criminal justice system, and also study its structure and administration.

The applied nature of the degree results in graduates with a B.A. in justice who can compete for positions in various justice employment fields. Justice juniors and seniors also enjoy opportunities for internships with various justice agencies.

Justice courses are available online and in the classroom.

### Major — B.A. Degree

- Complete the general university requirements, including 2 W and 1 O class and 39 upper-division credits. (page 127).
  - Complete the B.A. degree requirements (page 132).
  - 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 F310—Principles of Corrections.....3  
JUST F340—Rural Justice in Alaska .....3  
JUST F358—Juvenile Delinquency .....3
  - Complete 18 credits of justice electives\*
  - Minimum credits required .....120
- \* Students must earn a C- grade 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

- Complete the following:  
JUST F110—Introduction to Justice .....3  
JUST electives.....12
  - Minimum credits required .....15
- Note: 400-level courses require junior standing or instructor permission  
\* Students must earn a C- grade or better in each course.

## LAW AND SOCIETY

College of Liberal Arts  
Department of Political Science  
907-474-7609  
[www.uaf.edu/polisci/](http://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

- Complete the following:  
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
- 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
- Minimum credits required .....15

## LEADERSHIP

School of Management  
Northern Leadership Center  
907-474-7461  
[www.uaf.edu/som/](http://www.uaf.edu/som/)

### Minor only

The minor in leadership and management is administered by the Northern Leadership Center. 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 economy.

### Minor

- Complete two of the following:  
LEAD/BA F470—Leadership Theory and Development\* .....3  
LEAD/BA F472—Leading Change\* .....3  
HSEM/LEAD F456—Leadership and Influence During Crisis\* .....3
- Complete 9 credit hours from one of the following “tracks” OR with the written approval of the Director of the Northern Leadership Center, any three 3-credit hour courses from any combination of tracks.
  - Business Administration  
BA F280—Sports Leadership.....3  
BA F307—Introductory Human Resource Management.....3  
BA F460O—International Business .....3

b. Military Science	
MILS F101—Foundations of Officership.....	2
MILS F102—Basic Leadership.....	2
MILS F201—Individual Leadership Studies.....	3
MILS F202—Leadership and Teamwork.....	3
c. Political Science	
PS F212—Introduction to Public Administration.....	3
PS F301—American Presidency*.....	3
PS/PHIL F412W—Modern Political Theory*.....	3
PS F437—United States Foreign Policy*.....	3
d. Communication	
COMM F330—Intercultural Communication.....	3
COMM F331O—Advanced Group Communication.....	3
COMM F335O—Organizational Communication.....	3
COMM F475—Applied Communication in Training and Development*.....	3
e. Outdoor Leadership	
• NRM F161—Introduction to Wilderness Leadership.....	3
• NRM F361—Advanced Wilderness Leadership*.....	3
• Select from the following skills courses for the remaining 3 credits:	
RECR F140H—Beginning Rock Climbing.....	1
RECR F140K—Advanced Rock Climbing.....	1
RECR F140L—Technical Climbing.....	1
RECR F140Y—Kayaking.....	1
RECR F170G—Introduction to Ski Mountaineering.....	1
RECR F170N—Introduction to Winter Camping.....	1
EMS F150—Wilderness Emergency Care.....	3
f. Alaska Native Community Leadership	
ANS F310—Indigenous Land Settlements.....	3
ANS F325—Native Self Governments.....	3
ANS/RD F401—Cultural Knowledge of Native Elders.....	3
ANS F425—Federal Indian Law and Alaska Natives.....	3
RD F492—Rural Development Seminar.....	3
3. Minimum credits required.....	15

\* These courses have prerequisites that need to be taken into consideration. Consult with the leadership minor coordinator.

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
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/WGS 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 F4100—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 F4500—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 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.

**LINGUISTICS**

College of Liberal Arts  
 Linguistics Program  
 907-474-6585  
[www.uaf.edu/linguist/](http://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 127).	
2. Complete the B.A. degree requirements (page 132).	
3. Complete the following program (major) requirements:*	
a. Complete the following:**	
Foreign or Native language (four semesters or equivalent) and a second language (two semesters).***.....	12-16
LING F101—Nature of Language.....	3

**MARINE SCIENCE**

School of Fisheries and Ocean Sciences  
 907-474-7824  
[www.sfos.uaf.edu/academics/](http://www.sfos.uaf.edu/academics/)

**Minor only**

Though the marine science minor is available to students in all degree programs, fisheries students will particularly benefit from the breadth this minor offers. The program will also appeal to students from other disciplines (e.g., political science, earth sciences, biology and wildlife, environmental science, resource management, education) in which possible career paths may require and/or benefit from training in marine science (policymaking, resource management, education, the seafood industry, etc.).

Students who complete the minor in marine science will possess a knowledge base and skill set that will make them more competitive for a wide variety of agency and organization positions, particularly within the state of Alaska. The education and training will be applicable to jobs within government management agencies such as the Alaska Department of Fish and Game and the U.S. Fish and Wildlife Service, as well as Alaska Native organizations, nonprofit conservation organizations, the seafood industry, or in other policy development, fisheries, education or outreach capacities.

1. Complete the following:	
MSL F211—Introduction to Marine Science I .....	3
MSL F212—Introduction to Marine Science II.....	3
MSL F213L—Marine Science Laboratory .....	1
2. Complete 3 credits from the following:	
MSL F317—Introduction to Marine Mammal Biology.....	3
MSL F330—The Dynamic Alaskan Coastline.....	3
MSL F403—Estuaries Oceanography.....	3
MSL F412—Early Life Histories of Marine Invertebrates .....	3
MSL F431—Polar Marine Science.....	3
MSL F449 – Biological Oceanography .....	3
MSL F463—Chemical Coastal Processes.....	3
3. Complete 5 additional credits from the following:	
<b>Marine Science and Limnology</b>	
MSL F220—Scientific Diving .....	2
MSL F317—Introduction to Marine Mammal Biology.....	3
MSL F330—The Dynamic Alaskan Coastline.....	3
MSL F403—Estuaries Oceanography.....	2
MSL F412—Early Life Histories of Marine Invertebrates .....	3
MSL F419—Concepts in Physical Oceanography .....	3
MSL F421—Field Course in Subtidal Studies.....	2
MSL F431—Polar Marine Science.....	3
MSL F440—Oceanography for Fisheries.....	3
MSL F449—Biological Oceanography .....	3
MSL F450—Marine Biology and Ecology Field Course .....	4
MSL F456—Kelp Forest Ecology.....	4
MSL F461—Chemical Oceanography .....	3
MSL F463—Chemical Coastal Processes.....	3
MSL F492—IMS Seminar.....	1
<b>Fisheries</b>	
FISH F288/BIOL F288—Fish and Fisheries of Alaska .....	3
FISH F425—Fish Ecology .....	3
FISH F440—Oceanography for Fisheries .....	3
FISH/BIOL F427—Ichthyology .....	3
<b>Chemistry</b>	
CHEM F202—Basic Inorganic Chemistry .....	3
CHEM F212—Chemical Equilibrium and Analysis .....	4
<b>Biology and Wildlife</b>	
BIOL F305—Invertebrate Zoology .....	5
BIOL F473—Limnology .....	4
<b>Economics</b>	
ECON F235—Introduction to Natural Resource Economics.....	3
<b>Geology and Geophysics</b>	
GEOS/GEOG F222—Fundamentals of Geospatial Sciences.....	3
<b>Statistics</b>	
STAT F200X—Elementary Probability and Statistics.....	3
4. Minimum credits required .....	15

## MATHEMATICS

College of Natural Science and Mathematics  
 Department of Mathematics and Statistics  
 907-474-7332 or 474-5374  
[www.uaf.edu/dms/](http://www.uaf.edu/dms/)

### 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 a minor in statistics (see separate listings).

### Major — B.A. or B.S. Degree

- Complete the following pre-major requirement:  
Students must be ready to matriculate into MATH F251X before they will be allowed to declare mathematics as their major.
  - Complete the general university requirements (page 127) to include a total of 39 upper-division credits, in any field, to satisfy the general university requirements for baccalaureate degrees.
  - Complete the B.A. or B.S. degree requirements. (See page 132–132. As part of the B.S. degree requirements, complete PHYS F103X and PHYS F104X, or PHYS F211X and PHYS F212X.)
  - Complete the following program (major) requirements:\*
 

MATH F251X—Calculus I** .....	4
MATH F252X—Calculus II** .....	4
MATH F253X—Calculus III.....	4
MATH F265—Introduction to Mathematical Proofs.....	3
MATH F314—Linear Algebra .....	3
  - Complete one of the following options:\*
 

**Mathematics Option**

    - Complete the following:
 

MATH F401W—Introduction to Real Analysis .....	3
MATH F405W—Abstract Algebra .....	3
MATH F490O—Senior Seminar.....	2
    - Complete at least 21 additional credits of electives.\* Acceptable elective courses include any math or statistics course at the F300 level or above, and CS F201. At least 15 credits must be math courses (for exceptions see below\*\*). Following are some suggested elective packages.
      - Pure math:
 

MATH F305—Geometry.....	3
MATH F320—Topics in Combinatorics (3) or MATH F321—Number Theory (3) .....	3
MATH F404—Topology .....	3
MATH F422—Complex Analysis.....	3
Additional elective credits.....	9
      - Applied math:
 

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
- Minimum credits required .....

### Statistics Option

- Complete the following:
 

ENGL F314W,O/2—Technical Writing (3) or ENGL F414W—Research Writing (3) .....	3
CS F201—Computer Science I (3) or NRM F338—Introduction to Geographic Information Systems (3) .....	3
MATH F371—Probability .....	3
MATH F401W—Introduction to Real Analysis (3) or MATH F405W—Abstract Algebra (3) .....	3
MATH F408—Mathematical Statistics .....	3
STAT F300—Statistics.....	3
STAT F401—Regression and Analysis of Variance.....	4
STAT F402—Scientific Sampling .....	3
STAT F454—Statistical Consulting Seminar .....	1
Additional elective credits at the F300 level or above.....	3
- Minimum credits required .....

\* Students must earn a C- grade 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 postbaccalaureate teacher preparation program, a one-year intensive program, during your senior year.
- Note: All mathematics majors — including double majors — must have an advisor from the Department of Mathematics and Statistics.
- Note: In addition to meeting all the general requirements for the specific degree, certain mathematics courses are required of all mathematics majors. At least 12 approved mathematics credits at the F300 level or above must be taken while in residence on the Fairbanks campus. All electives must be approved by the department.

### Requirements for mathematics teachers (grades 7-12):\*\*\*\*

1. Complete the following:
  - CS F201—Computer Science I.....3
  - MATH F305—Geometry.....3
  - MATH F306—Introduction to the History and Philosophy of Mathematics .....3
  - MATH F320—Topics in Combinatorics (3) or MATH F321—Number Theory (3) or MATH F307—Discrete Mathematics (3) .....3
  - STAT F300—Statistics (3) or MATH F371—Probability (3) and MATH F408 —Mathematical Statistics (3) .....3-6
2. Complete two of the following:
  - MATH F302—Differential Equations.....3
  - MATH F310—Numerical Analysis .....3
  - MATH F421—Applied Analysis .....4
  - MATH F422—Introduction to Complex Analysis.....3
  - MATH F460—Mathematical Modeling .....3

### Minor

1. Complete the following:
    - Math F251X—Calculus I.....4
    - Math F252X—Calculus II .....4
    - Math F253X—Calculus III .....4
    - At least 9 additional credits from MATH F265, 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  
<http://cem.uaf.edu/me/>

### B.S., B.S./M.S. Degrees

Minimum Requirements for Degree: B.S.: 130 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 a concentration in mechanical, 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 127. As part of the core curriculum requirements, complete MATH F251X, CHEM F105X and CHEM F106X.)
2. Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree requirements, complete MATH F252X, 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 F253X—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 F486—Senior Design .....1
  - ME F487W,O\*\*—Design Project .....3

4. Complete the Fundamentals of Engineering (FE) examination administered by the State of Alaska.
5. Complete one of the following concentrations:
  - Mechanical**
    - Complete the following:
      - Mechanical Engineering electives at the F400-level or above.....6
      - Advisor approved engineering elective at the F400-level or above .3
  - Aerospace**
    - Complete the following:
      - ME F450—Theory of Flight.....3
      - ME F451—Aerodynamics.....3
      - ME F452—Introduction to Astrodynamics.....3
      - ME F453—Propulsion Systems.....3
  - Petroleum**
    - Complete the following:
      - ME F409—Controls.....3
      - ME F416—Mechanical Equipment for the Petroleum Industry.....3
      - ME F464—Corrosion Engineering.....3
      - PETE F426—Drilling Engineering.....3
6. Minimum credits required .....130
  - \* Students must earn a C- grade or better in each of the program (major) requirements.
  - \*\* Design project must be related to area of concentration.

7. 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
8. 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)
9. Minimum credits required for both degrees.....151
  - \* Students must satisfy the General University Requirements for minimum grades for the respective B.S. or M.S. program (major) requirements.
  - 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.

**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 GRE (general) scores.
  - d. Submit a study goal statement.
  - e. Submit a UAF graduate application for admission.
2. Complete the general university requirements (page 127).
3. Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree requirements, complete: MATH F252X, PHYS F211X and PHYS F212X.)
4. Complete the master’s degree requirements (page 203).
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 F253X—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 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 F486—Senior Design.....1
  - ME F487W/O— Design Project .....3
6. Complete State of Alaska Fundamentals of Engineering examination.

**MILITARY SCIENCE AND LEADERSHIP**

School of Management  
 Department of Military Science and Leadership  
 907-474-7501  
[www.uaf.edu/rotc/](http://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.

## MINING ENGINEERING

College of Engineering and Mines  
Department of Mining and Geological Engineering  
907-474-7388  
<http://cem.uaf.edu/mingeo/>

### 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 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 employed in the mineral and energy industries,
- can solve problems germane to Alaska, and
- are professionals and who 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 nonmining 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 <http://cem.uaf.edu/mingeo/abet/>.

### Major — B.S. Degree

1. Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete: CHEM F105X, CHEM F106X, LS F101X and MATH F251X.)
2. Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree requirements, complete: MATH F252X, 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.....	3
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 F253X—Calculus III.....	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 F415—Coal Preparation .....3
    - CE F603—Arctic Engineering .....3
    - Approved technical electives .....3-6
  6. Complete the Fundamentals of Engineering (FE) examination administered by the State of Alaska.
  7. Minimum credits required .....132
- \* Students must earn a C- grade 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 F104—Mining Safety and Operations Lab.....1
    - MIN F226—Introduction to Mine Development .....2
  2. Complete 11-12 MIN credits from advisor-approved electives at 300 or 400 level\* .....11-12
  3. Minimum credits required .....15
- \* Students must earn a C- grade or better in each course.

**MUSIC**

College of Liberal Arts  
 Department of Music  
 907-474-7555  
[www.uaf.edu/music/](http://www.uaf.edu/music/)

**B.A., B.M. Degrees**

Minimum Requirements for Degrees: B.A.: 120 credits;  
 B.M.: 122-145 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 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 in the B.A. program will be required to earn a minimum of 4 credits in large ensembles. Music majors in the B.M. program 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 nonmajor) 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 F200 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 or better in each course of their major concentration. MUS F493 is repeatable up to 6 credits. MUS 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**

**This program is presently suspended.**

**Concentrations: General, Music Theory, Music History, Music Composition**

1. Complete the general university requirements (page 127).
2. Complete the B.A. degree requirements (page 132).
3. Complete an audition on the major instrument.
4. Complete the following program (major) requirements:\*
  - MUS F131 and F132—Basic Music Theory I and II .....6
  - MUS F133 and F134—Basic Ear Training I and II .....4
  - MUS F152–F154—Functional Piano+.....3
  - MUS F161–F262—Private Lessons (major area)\*\*.....12
  - MUS F190—Recital Attendance.....0
  - MUS F221 and F222—History of Western Music I and II .....6
  - MUS F231 and F232—Advanced Music Theory I and II .....4
  - MUS F233 and F234—Advanced Ear Training I and II .....2
  - MUS F253—Piano Proficiency++ .....0
  - MUS F331—Form and Analysis .....3
  - MUS F332—Introduction to Computer-based Music Technology ...3
  - MUS F476—Senior Project .....3
  - Large ensembles .....4
5. Complete one of the following concentrations:
  - General**
    - a. Complete at least 12 credits from the following:
      - MUS F410W—Women in Music.....3
      - 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 of the Twentieth Century .....3
      - MUS F431—Counterpoint .....3
      - MUS F432—Orchestration and Arranging.....3
    - b. Complete at least 9 credits from the following:
      - MUS F207—UAF Jazz Band.....1
      - MUS F307—Chamber Music .....1
      - MUS F351O—Conducting .....3
      - MUS F361—Private Lessons (major area).....2

MUS F362—Private Lessons (major area) .....	2
MUS F426—Music Literature.....	2
MUS F433—Seminar in Musical Composition .....	3
MUS F434—Advanced Harmonic Analysis.....	3

**Music Theory**

a. Complete 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
b. Complete at least 6 credits from the following:	
MUS F410W—Women in Music.....	3
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 of the Twentieth Century .....	3
c. Complete at least 6 credits from the following:	
MUS F207—UAF Jazz Band.....	1
MUS F307—Chamber Music.....	1
MUS F351O—Conducting.....	3
MUS F361—Private Lessons (major area).....	2
MUS F362—Private Lessons (major area) .....	2
MUS F426—Music Literature.....	2
MUS F435—Private Lessons: Music Composition .....	2-4

**Music History**

a. Complete at 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 of the Twentieth Century.....	3
b. Complete at least 6 credits from the following:	
MUS F410W—Women in Music.....	3
MUS F426—Music Literature.....	2
MUS F431—Counterpoint .....	3
MUS F434—Advanced Harmonic Analysis.....	3
c. Complete at least 6 credits from the following:	
MUS F207—UAF Jazz Band.....	1
MUS F307—Chamber Music.....	1
MUS F351O—Conducting.....	3
MUS F361—Private Lessons (major area).....	2
MUS F362—Private Lessons (major area) .....	2
MUS F432—Orchestration and Arranging.....	3

**Music Composition**

a. Complete the following:	
MUS F432—Orchestration and Arranging.....	3
MUS F433—Seminar in Musical Composition .....	3
MUS F435—Private Lessons: Music Composition.....	6
b. Complete at least 6 credits from the following:	
MUS F410W—Women in Music.....	3
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 of the Twentieth Century.....	3
MUS F426—Music Literature.....	2
MUS F434—Advanced Harmonic Analysis.....	3
c. Complete at least 6 credits from the following:	
MUS F207—UAF Jazz Band.....	1
MUS F307—Chamber Music.....	1
MUS F351O—Conducting.....	3
MUS F361—Private Lessons (major area).....	2
MUS F362—Private Lessons (major area) .....	2
MUS F431—Counterpoint .....	3
6. Minimum credits required .....	120

- \* Students must earn a C grade or better in each course.
- \*\* Students with voice as their major instrument are also required to complete MUS F245 Singers Diction I or MUS F246 Singers Diction II.
- + As necessary to complete piano proficiency requirements.
- ++ Enrollment only following completion of piano proficiency requirements.

**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 127. 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 I and II.....	6
MUS F133 and F134—Basic Ear Training I and II .....	4
MUS F221 and F222—History of Music .....	6
MUS F231 and F232—Advanced Theory I and II.....	4
MUS F233 and F234—Advanced Ear Training I and II .....	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
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 .....	122

- \* Students must earn a C grade or better in each course.
- \*\* 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 127).	
3. Complete a piano placement test during the first week of classes.	

4. Complete the following degree and program (major) requirements:*	MUS F223—Alaska Native Music.....	3
Large ensembles.....	MUS F231—Advanced Music Theory I.....	2
MUS F131 and F132—Basic Theory I and II.....	MUS F232—Advanced Music Theory II.....	2
MUS F133 and F134—Basic Ear Training I and II.....	MUS F410W—Women in Music.....	3
MUS F161–F461—Private Lessons (major).....	MUS F421W—Music Before 1620.....	3
MUS F190—Recital Attendance.....	MUS F422W—Music in the Seventeenth and	3
MUS F221 and F222—History of Music.....	Eighteenth Centuries.....	3
MUS F231 and F232—Advanced Theory I and II.....	MUS F423W—Music in the Nineteenth Century.....	3
MUS F233 and F234—Advanced Ear Training I and II.....	MUS F424W—Music Since 1900.....	3
MUS F253—Piano Proficiency.....		
MUS F331—Form and Analysis.....	b. Select 2 credits from the following music large ensemble courses:	
MUS F332—Introduction to Computer-based Music Technology.....	MUS F101—University Chorus.....	1
MUS F351O—Conducting.....	MUS F117—Northern Lights Sting Orchestra.....	1
MUS F390—Junior Recital.....	MUS F203—Orchestra.....	1
MUS F432—Orchestration and Arranging.....	MUS F205—Wind Ensemble.....	1
	MUS F211—Choir of the North.....	1
5. Complete the following education requirements:	c. Select 4 credits from the following courses in lessons or ensemble:	
a. Contact the School of Education for application procedures for admission to the teacher education program.**	MUS F151—Class Lessons.....	1
b. Complete the following:	MUS F161–F462—Private Lessons.....	2
MUED F110—Becoming a Music Teacher in the 21st Century.....	MUS F207—UAF Jazz Band.....	1
MUED F201—Introduction to Music Education.....		
MUED F315—Music Methods and Techniques.....	d. MUS F190—Recital Attendance (two semesters).....	0
MUED F316—Practicum in Middle School Classroom	e. Total credits.....	18
Techniques.....		
EDSE F482—Inclusive Classrooms for All Children.....	<b>Option B (Performance emphasis)</b>	
ANS/ED F420—Alaska Native Education (3)	a. Select 6 credits from the following courses:	
or ED F350—Communication in Cross-Cultural	MUS F103—Fundamentals of Music.....	3
Classrooms (3).....	MUS F122—History of Popular Music.....	3
PSY F240—Lifespan Developmental Psychology.....	MUS F124—Music in World Cultures.....	3
c. Complete a multicultural elective***.....	MUS F131—Basic Music Theory I.....	3
	MUS F132—Basic Music Theory II.....	3
	MUS F133—Basic Ear Training I.....	2
	MUS F134—Basic Ear Training II.....	2
	MUS F221—History of Music.....	3
	MUS F222—History of Music.....	3
	MUS F223—Alaska Native Music.....	3
	MUS F231—Advanced Music Theory I.....	2
	MUS F232—Advanced Music Theory II.....	2
	MUS F410W—Women in Music.....	3
	MUS F421W—Music Before 1620.....	3
	MUS F422W—Music in the Seventeenth and	3
	Eighteenth Centuries.....	3
	MUS F423W—Music in the Nineteenth Century.....	3
	MUS F424W—Music Since 1900.....	3
	b. Select 4 credits from the following music ensemble courses:	
	MUS F101—University Chorus.....	1
	MUS F117—Northern Lights Sting Orchestra.....	1
	MUS F203—Orchestra.....	1
	MUS F205—Wind Ensemble.....	1
	MUS F211—Choir of the North.....	1
	c. Select 8 credits from the following courses in private lessons or chamber music:	
	MUS F161–F462—Private Lessons.....	2
	MUS F207—UAF Jazz Band.....	1
	MUS F307—Chamber Music.....	1
	d. MUS F190—Recital Attendance (two semesters).....	0
	e. Total credits.....	18
	* Students must earn a C or better in each course.	

Note: No substitutions are permitted between options. It is recommended that students contact the Music Department for program advising before registering for music classes. All performance courses are subject to course enrollment and studio space limitations. Large ensemble courses are available subject to current vacancies for particular instrumental areas. Private lessons and large ensemble courses may require that students pass a performance audition. Prerequisite requirements apply.

**Elementary**

a. Complete the following:	MUED F309—Elementary School Music Methods.....	3
	ED F452O—Elementary Internship.....	3-12
b. Minimum credits required.....		133

**Secondary**

a. Complete the following:	MUED F405W—Secondary School Music Methods.....	3
	ED F453O—Secondary Internship.....	3-12
b. Minimum credits required.....		130

**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.....		145

\* Students must earn a C grade or better in each course.  
 \*\* 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**  
 Students must select from one of the options defined below:\*

**Option A (Non-performance emphasis)**

a. Select 12 credits from the following courses:	MUS F103—Fundamentals of Music.....	3
	MUS F122—History of Popular Music.....	3
	MUS F124—Music in World Cultures.....	3
	MUS F131—Basic Music Theory I.....	3
	MUS F132—Basic Music Theory II.....	3
	MUS F133—Basic Ear Training I.....	2
	MUS F134—Basic Ear Training II.....	2
	MUS F221—History of Music.....	3
	MUS F222—History of Music.....	3

## NATURAL RESOURCES MANAGEMENT

School of Natural Resources and Extension  
907-474-7083  
[www.uaf.edu/snre/](http://www.uaf.edu/snre/)

### B.S. Degree

Minimum Requirements for Degree: 120 credits

The complexity and interrelatedness of society and the environment require an interdisciplinary approach to making and implementing sustainable natural resource decisions. The natural resources management degree integrates knowledge in natural science, policy, economics and human values to advance the sustainable management of natural resources and agricultural systems. Students learn through a variety of approaches, including classroom instruction, hands-on laboratory experiences, and opportunities for internships and independent research under the guidance of a faculty mentor. Successful graduates will be qualified for employment in a broad range of private enterprise, government agencies and nonprofit organizations in the various natural resources fields, and will be well-equipped for graduate studies.

#### Major — B.S. Degree

- Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete CHEM F105X, NRM F303X and a MATH—Calculus course.)
  - Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree requirements, complete BIOL F115X, BIOL F116X and STAT F200X\*.)
  - Complete the following (major) requirements:\*
 

NRM F101—Natural Resources Conservation and Policy.....	3
NRM F111—Introduction to Sustainability .....	3
NRM F240—Natural Resource Measurements .....	3
NRM F210—Introduction to Sustainable Agriculture.....	3
ECON F235—Introduction to Natural Resource Economics.....	3
NRM F277—Conservation Biology.....	3
NRM F290—Resource Management Issues at High Latitudes .....	2
NRM F366—Survey Research in Natural Resources Management..	3
NRM F370—Introduction to Watershed Management.....	3
NRM F375—Natural Resource Ecology .....	3
NRM F380W—Soils and the Environment.....	3
NRM F403W/O—Environmental Decision Making.....	3
NRM F430—Resource Management Planning.....	3
NRM/GEOG F483W—Research Design, Writing, and Presentation Methods .....	3

    - Complete one of the following GIS courses:
 

NRM F338—Introduction to Geographic Information Systems .....	3
NRM F369— GIS and Remote Sensing for Natural Resources .....	3
NRM F435—GIS Analysis .....	4
    - Complete one of the following policy/law courses:
 

NRM F204—Public Lands Law and Policy .....	3
NRM F407—Environmental Law .....	3
    - Complete a minor, pre-vet, or 15 credits 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 natural resources management, chemistry, communications, education, art, fisheries and wildlife management. Courses must be approved by the student's academic advisor and department head prior to attaining senior standing. Note: students must take a total of 39 upper division credits.
  - Minimum credits required .....120
- \* Students must earn a C- grade or better in each course.

## Minors

### Natural Resource Management

- Complete the following:
 

NRM F101—Natural Resources Conservation and Policy.....	3
NRM electives* .....	15
  - Minimum credits required .....18
- \* At least 6 credits must be upper-division. The minor program must be approved by an NRM advisor.

### Forest Management \*

- Complete the following:\*\*
 

NRM F240—Natural Resources Measurement and Inventory .....	3
NRM F251—Silvics and Dendrology .....	4
NRM F375—Natural Resource Ecology (3) or BIOL F371—Principles of Ecology (3) .....	3
- Complete at least 6 credits from the following:\*\*
 

NRM F370—Introduction to Watershed Management.....	3
NRM F440—Silviculture .....	3
NRM F450—Forest Management.....	3
NRM F452—Forest Health and Protection.....	3
NRM F453—Harvesting and Utilization of Forest Products .....	3
- Minimum credits required .....16

Note: Students must complete at least 16 credits dedicated to the minor. If the student has taken courses to complete major requirements, the credits must be made up from additional minor-specific courses.

\* Potential accreditation as a certified forester by the Society of American Foresters will require completion of the following NRM courses: F251, F440, F450, F452 and F453 in combination with the NRM B.S. degree. Prerequisites required for the courses listed are part of the NRM degree program, but students from other programs will be required to complete the prerequisites specified for individual classes. NRM F452 also requires the completion of either BIOL F239 or NRM F211 as a requisite. These two courses are not required for the general NRM program and will not apply to the number of credits for the Forest Management Minor.

\*\* Students must earn a C grade or better in each course.

## NORTHERN STUDIES

College of Liberal Arts  
907-474-7126  
[www.uaf.edu/northern/](http://www.uaf.edu/northern/)

### B.A. Degree

Minimum Requirements for Degree: 120 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 Russia and the Commonwealth of Independent States, see Exchange Programs and Study Abroad Programs, page 80.

## Major — B.A. Degree

- Complete the general university requirements (page 127).
- Complete the B.A. degree requirements (page 132).
- Complete the following:\*
 

NORS F201—The Circumpolar North: An Introductory Overview.....	3
ANS/ANTH F242—Native Cultures of Alaska (3) or SOC F301—Rural Sociology (3).....	3
BIOL F104X—Natural History of Alaska** .....	4
NORS/ART F425W—Visual Images of the North (3) or ENGL/ANS F349—Narrative Art of Alaska Native Peoples (in English Translation) (3) or ENGL F350—Literature of Alaska and the Yukon Territory (3).....	3
GEOG F427—Polar Geography.....	3
HIST F483W—20th Century Circumpolar History.....	3
NORS F484W/O—Seminar in Northern Studies .....	3
PS F263—Alaska Native Politics (3) or PS F462—Alaska Government and Politics (3) or PS F460—Government and Politics of Canada (3) or PS F468—Government and Politics of Russia (3).....	3
- Complete 15 credits\* from two of the following groups:\*\*\*
  - Anthropology
 

ANTH F302—Ethnography of Siberia (s).....	3
ANTH F309—Circumpolar Archaeology .....	3
ANS/ANTH F320W—Language and Culture: Applications to Alaska.....	3
ANTH F383—Athabaskan Peoples of Alaska and Adjacent Canada.....	3
ANTH F472—Culture and History of the North Atlantic.....	3
  - Geography
 

GEOG F302—Geography of Alaska .....	3
GEOG F303—Geography of United States and Canada.....	3
GEOG F306—Geography of Russia.....	3
  - 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
  - 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
  - Humanities\*\*\*\*
 

ANS/ART F365—Native Art of Alaska .....	3
ANS/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
- Minimum credits required .....120
 

\* Students must earn at least a C- grade in each course.

\*\* Students may take this course as one of the two required lab science courses within the university's general requirements.

\*\*\* Students may not double count these major requirements to fulfill a minor.

\*\*\*\* Two semesters of a northern language, such as Eskimo or Russian. By choosing the northern language option you may have to take additional upper division credits to meet the minimum general university requirement of 39 upper division credits.

\*\*\*\*\* Students may not double count the fulfillment of the humanities of government requirements in #3 above with government or humanities courses in sections d or e of #4.

## Minor

- Complete the following:
 

NORS F201—The Circumpolar North: An Introductory Overview.3 ANS/ANTH F242—Native Cultures of Alaska (3) or SOC F301—Rural Sociology (3).....	3
NORS/ART F425W—Visual Images of the North (3) or ENGL F349—Narrative Art of Alaska Native Peoples (in English Translation) (3) or ENGL/ANS F350—Literature of Alaska and the Yukon Territory (3).....	3
BIOL F104X—Natural History of Alaska* .....	4
GEOG F427—Polar Geography.....	3
HIST F483W—20th Century Circumpolar History.....	3
- Minimum credits required .....19
 

\* Students may take this course as one of the two required lab science courses within the university's general requirements.

## PETROLEUM ENGINEERING

College of Engineering and Mines  
Department of Petroleum Engineering  
907-474-7734  
<http://cem.uaf.edu/pete/>

### B.S. Degree

Minimum Requirements for Degree: 133 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:

- Our graduates will possess the technical knowledge and skills required to analyze real world petroleum engineering problems, and develop innovative solutions that meet the needs of multiple stakeholders.
  - Our graduates will recognize the value of continuing professional development throughout their careers. This may take the form of advanced degrees, industry courses, and formal mentoring and coaching.
  - Our graduates will compete effectively in the global petroleum engineering profession and they will exhibit the behaviors necessary to become leaders in the Alaska petroleum industry and beyond.
- For more information about the petroleum engineering program mission, goals and educational objectives, visit <http://cem.uaf.edu/pete/abet/>.

### Major — B.S. Degree

- Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete: MATH F251X, CHEM F105X and F106X, and LS F101X.)

2. Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree requirements, complete: MATH F252X, 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 F101—Fundamentals of Petroleum, Drilling and  
Production.....3
    - 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 F253X—Calculus III.....4
    - MATH F302—Differential Equations.....3
    - MATH F310—Numerical Analysis (3)  
or ES F301—Engineering Analysis (3).....3
  5. Complete the Fundamentals of Engineering (FE) examination administered by the State of Alaska.
  6. Minimum credits required .....133
- \* Students must earn a C- grade 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/phil/](http://www.uaf.edu/phil/)

### B.A. Degree

**This program is presently suspended.**

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 127).

2. Complete the B.A. degree requirements (page 132).
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—Critical Thinking.....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 and Research 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—Critical Thinking.....3
    - PHIL F110—Introduction to Political Philosophy.....3
    - PHIL F202—Introduction to Eastern 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 F381—Topics in Logics.....3
    - PHIL F402—Biomedical and Research 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 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.S. Degree

Minimum Requirements for Degree: 120 credits

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 in industry, government or the private sector that require refined abilities in problem-solving.

The **physics** concentration represents the classical undergraduate physics curriculum, while the **applied physics** concentration provides a solid foundation in general physics with the flexibility to include applied or interdisciplinary course work, aimed at e.g., engineering physics, biophysics or oceanography.

The **atmospheric physics** concentration is a solid foundation at the interface of physics, climate sciences and meteorology. The **computational physics** concentration is relevant for students seeking careers in any areas that require expertise in computational modeling and simulation of physical systems.

The **technical management** concentration 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 approval for some courses are, upon graduation, welcome to apply to the MBA program in UAF's School of Management.

## Major — B.S. Degree

- Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete MATH F251X.)\*
- Complete the B.S. degree requirements. (See page 132. As part of the B.S. degree requirement, complete MATH F252X, PHYS F211X and PHYS F212X.)\*
- 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 F341—Classical Physics I: Particle Mechanics .....4
  - PHYS F342—Classical Physics II: Electricity and Magnetism.....4
- Complete the following program (major) requirements:\*\*
  - MATH F251X—Calculus I.....4
  - MATH F252X—Calculus II .....4
  - MATH F253X—Calculus III.....4
- Complete one of the following concentrations:
  - Physics**
    - Complete 6 credits of MATH electives at the F300 level or above. (MATH F314, MATH F421 or MATH F422 are recommended.)\* .....6
    - Complete the following:\*
      - PHYS F351—Thermal Physics .....2
      - PHYS F451—Statistical Physics.....2
      - PHYS F343—Classical Physics III: Vibration and Waves .....4
      - PHYS F381W,O—Physics Laboratory .....3

- PHYS F421—Quantum Mechanics .....4
- PHYS F462—Geometrical and Physical Optics.....4
- c. Complete 6 credits from the following:\*
  - PHYS F471—Advanced Topics in Physics I
  - PHYS F472—Advanced Topics in Physics II

## Applied Physics

- Complete 6 credits of MATH electives at the F300 level or above. (MATH F314, MATH F421, or MATH F422 are recommended.)\*.....6
- Complete 9 physics credits at the F300 level or above.....9
- Complete 17 credits from applied physics .....17
 

*Note: The 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.*

## Atmospheric Physics

- Complete 6 credits of MATH electives at the F300 level or above. (MATH F314, MATH F421 or MATH F422 are recommended.)\* .....6
- Complete 9 physics credits at the F300 level or above.\* .....9
- Complete the following:\*
  - ATM F401—Introduction to Atmospheric Science.....3
  - ATM F413—Atmospheric Radiation.....3
  - ATM F445—Atmospheric Dynamics.....3
- Complete 8 credits in other relevant upper-division courses.\* .....8
 

*Note: The 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.*

## Computational Physics

- Complete 6 credits of MATH electives at the F300 level or above. (MATH F314, MATH F421 or MATH F422 are recommended.)\* .....6
- Complete 9 physics credits at the F300 level or above.....9
- Complete the following:\*
  - MATH F310—Numerical Analysis.....3
  - CS F201—Computer Science I.....3
  - CS F202—Computer Science II.....3
- Complete 8 credits in other relevant upper-division courses\* .....8
 

*Note: The 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.*

## Technical Management

- Complete 3 credits of MATH electives at the F300 level or above. (MATH F314, MATH F421 or MATH F422 are recommended.)\* .....3
- Complete STAT F200X—Elementary Probability and Statistics.....3
- Complete 12 physics credits at the F300 level or above.\* .....12
- Complete the following:\*
  - ACCT F261—Principles of Financial Accounting.....3
  - ACCT F262—Principles of Managerial Accounting.....3
- Complete the following:
 

(Students must take ACCT F261, MATH F253X and PHYS F220 before taking these courses; or have permission of the MBA director. The School of Management agrees that such students will be allowed to register for these courses.)

  - 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
- Minimum credits required .....120

\* Students must earn a C- grade or better in each course.  
 \*\* Satisfies core curriculum or B.S. degree requirements, but not both.  
 \*\*\* Students can be required to earn a B grade or higher if applying for the MBA program.  
 Note: Other courses suggested to fulfill minimum credit requirements: ES F201, F307 and F308.  
 Note: Must exclude PHYS F103X and PHYS F104X from core curriculum natural science requirement.

**Requirements for physics teachers (grades 7-12)**

- Complete all the requirements of the B.S. degree.
  - 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
MATH electives .....	3
  - Complete 16 credits of physics-approved electives..... 16
  - All prospective science teachers must complete the following:\*
 

PHIL F481—Philosophy of Science (3).....	3
--	---
- \* Students must earn a C- grade or better in each course.  
 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. Apply for admission to the UAF School of Education's postbaccalaureate teacher preparation program, a one-year intensive program, during your senior year.

**Minor**

- Complete the following:\*
 

PHYS F211X—General Physics .....	4
PHYS F212X—General Physics .....	4
PHYS F213X—Elementary Modern Physics.....	4
  - Complete 8 credits of physics electives at the F300-400 level..... 8
  - Minimum credits required .....
- \* Students must earn a C- grade or better in each course.

**POLITICAL SCIENCE**

College of Liberal Arts  
 Department of Political Science  
 907-474-7609  
[www.uaf.edu/polisci/](http://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**

- Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete PS F100X, PS F300X and HIST F100X.)
- Complete the B.A. degree requirements (page 132).
- 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
- Complete 24 credits in political science. Include at least one course from four of the following sub-disciplinary groups:\*
  - 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
  - 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
  - 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
  - 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
- Group E—Political Theory
 

PS F314W—Political Ideologies.....	3
PS F315—American Political Thought.....	3
PS/WGS F340—Women and Politics .....	3

PS/PHIL F411W,O—Classical Political Theory .....	3
PS/PHIL F412W—Modern Political Theory .....	3
6. Minimum credits required .....	120
* <i>Students must earn a C- grade or better in each course.</i>	

**Minor**

1. Complete the following:  
PS F101—Introduction to American Government and Politics .....3
2. Complete at least four political science courses at the F200, F300 or F400 level .....12
3. Minimum credits required .....15

**PSYCHOLOGY**

College of Liberal Arts  
Department of Psychology  
907-474-7007  
[www.uaf.edu/psych/](http://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, multi-cultural, indigenous, and gay and lesbian perspectives.

In addition to active engagement in the classroom, students can 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 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. The program strives to attract Native high school and undergraduate students seeking a degree in psychology.

**Major — B.A. or B.S. Degree**

1. Complete the general university requirements (page 127).
2. Complete the B.A. or B.S. degree requirements (page 132 or 132).
3. Complete the following program (major) requirements:
  - a. **Foundation** (15 credits)  
Complete the following:  
PSY F101—Introduction to Psychology .....3  
PSY F201—Psychology and Culture .....3  
PSY/SOC F250—Introductory Statistics for Social Sciences (3)  
or STAT F200X—Elementary Probability and Statistics (3).....3  
PSY F275—Introduction to Social Science Research Methods .....3  
PSY F475W—Research Design and Analysis in Psychology (3)  
or PSY F485—Senior Seminar (3)  
or PSY F499—Thesis (3) .....3
  - b. **Theoretical** (6 credits)  
Complete 6 credits from the following:  
PSY F304—Personality .....3  
PSY F320—History and Systems of Psychology .....3

PSY/SOC F330—Social Psychology .....	3
PSY/SOC F333/WGS F332—Human Sexualities Across Cultures.....3	
PSY F335—Brain and Behavior.....3	
PSY F345—Abnormal Psychology.....3	
PSY/WGS F360O—Psychology of Women Across Cultures .....3	
PSY F370—Drugs and Behavior.....3	
PSY F440—Learning and Cognition.....3	
PSY F470W,O—Sensation and Perception .....	3

c. **Applied** (6 credits)

Complete 6 credits from the following:

PSY F337W—Sport Psychology .....	3
PSY F390W,O—Industrial and Organizational Psychology.....3	
PSY F445W—Community Psychology .....	3
PSY F455—Clinical Psychology.....3	
PSY F469—Health Psychology.....3	
PSY F475W—Research Analysis and Design .....	3
PSY/SOC F480W—Qualitative Social Science Research.....3	
PSY F485—Senior Seminar in Psychology.....3	
PSY F488—Practicum in Psychology.....1-6	
PSY F498—Research in Psychology .....	1-6
PSY F499—Thesis .....	1-6

d. **Breadth** (9 credits)

Complete 9 additional psychology credits selected from the catalog or from electives approved by psychology faculty.

4. Minimum credits required .....120

\* *Students must earn a C- grade or better in each course.*

\*\* *STAT F200X may count for both CORE and major requirement.*

*Note: No course may count in more than one area (e.g. PSY F475W may NOT count toward both 3a and 3c).*

*Note: Students may not count more than 6 credits of any combination of PSY F497 and F498 toward the major.*

*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.*

*Note: Students should work closely with an advisor to ensure completion of 39 upper division credits for graduation.*

**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  
907-474-6528 Toll-free 888-574-6528  
[www.uaf.edu/danrd/](http://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. Special application requirements and deadlines apply for distance B.A. degree programs. Students applying for acceptance into the Rural Development program need to complete two department-specific requirements in addition to general university admission: an oral interview with faculty and a written questionnaire. Findings from this process will be used to support the department advising process and assist students in connecting with faculty and mentors. The questionnaire and instructions for the oral interview are found on the DANSRD website under “How to Apply.”

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, 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 nonprofits, and state/federal agencies.

Within the B.A. degree program, students will select and develop a concentration in one of five areas:

- The **community health and wellness** concentration is for students with a strong interest in health and wellness. Students focus on the various facets of a healthy rural community. Going beyond the basics of health care, they explore different aspects of wellness within a community and develop tools to attain community wellness goals. Students blend and apply both contemporary and traditional health and wellness tools. Graduates may find employment with tribal governments, health consortia, clinics and schools.
- The **community research and indigenous knowledge** concentration is for students with interests in applied research involving 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 to do ethnographies, oral histories, community surveys and needs assessments, and archival research. Graduates may find employment with museums, ANCSA corporations, tribal governments, and state and federal agencies.
- The concentration in **indigenous organization management** is designed for students interested in development and operations of indigenous organizations in rural Alaska. Students develop an understanding of the history and constitutional basis for tribal governance, basics of federal Indian law, principles and practices of self-determination, and the mandates of the Alaska Native Claims Settlement Act. They develop skills in planning, budgeting and human resources management. Students can pursue a special interest, such as management of health programs, tribal governance programs or Alaska Native corporations, and tailor the concentration to these specifications through choice of related courses and electives. Graduates may find employment with tribal and municipal governments and organizations, ANCSA corporations, and state and federal agencies.
- The **natural resource development** concentration is designed for students with an interest in land and resources development, co-management and conservation. Students learn about traditional ecological knowledge, principles of natural resources management and policy, adaptive management, conservation and ecotourism, and skills for effective public/private/tribal collaboration in resource management. Management strategies for addressing climate change are explored. Graduates may find employment with ANCSA corporations, regional and tribal entities, or state and federal agencies.
- The concentration in **rural community business and economic development planning** is for students interested in creating sustainable economies in 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.

For more information contact the department toll-free at 888-574-6528 or visit our website: [www.uaf.edu/danrd/](http://www.uaf.edu/danrd/).

### Major — B.A. Degree

**Concentrations: Community Health and Wellness; Community Research and Indigenous Knowledge; Indigenous Organization Management; Natural Resource Development; or Rural Community Business and Economic Development Planning.**

1. Complete the general university requirements (page 127).
2. Complete the B.A. degree requirements (page 132), including 39 credits of upper division credits.
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:\*
 

RD elective.....	3
RD, ANS, TM or ED electives.....	6
5. Complete one of the following concentrations:

#### Community Health and Wellness

Complete 21 credits from the following:\*\*

ANS F242—Native Cultures of Alaska .....	3
ANS F275—Yup'ik Practices in Spirituality and Philosophy .....	3
ANS F330—Yup'ik Parenting and Child Development (Kuskokwim Campus only) .....	1-3
ANS F348W—Native North American Women .....	3
ANS F350W,O—Cross Cultural Communication: Alaskan Perspectives .....	3
ANS/ED F370—Issues in Alaska Bilingual and Multicultural Education.....	1
ANS/ED F420—Alaska Native Education.....	3
ANS F461—Native Ways of Knowing .....	3
EBOT F100—Introduction to Ethnobotany.....	3
HUMS F260—History of Alcohol in Alaska.....	1
HUMS F263—Fetal Alcohol Spectrum Disorder (FASD).....	1
HUMS F264—Culture, Chemical Dependency and Alaska Natives.....	1
HUMS F265—Substance Abuse and the Family .....	1
HUMS F280—Prevention and Community Development .....	3
RD F401—Cultural Knowledge of Native Elders.....	3
RD F462—Rural Health and Human Service Systems .....	3
RD F465—Community Healing and Wellness.....	3
RD F470/670—The Alaska Native Claims Settlement Act: Pre-1971 to present.....	3
RD F492—Rural Development Leadership Seminar .....	1-3
RHS; any advisor-approved courses .....	varies
RNS F120—Alaska Native Food Systems.....	3
TM F114—Tribal Justice in Tribal Court.....	1
TM F116—Juvenile Justice in Tribal Court .....	1
TM F117—Tribal Court Enforcement of Decisions.....	1
TM F118—Tribal Community and Restorative Justice .....	1

#### Community Research and Indigenous Knowledge

Complete 21 credits from the following:\*\*

ANL F256—Introduction to Alaska Native Languages: History, Status and Maintenance.....	3
ANL F287—Teaching Methods for Alaska Native Languages.....	3
ANL F315—Alaska Native Languages: Eskimo-Aleut.....	3
ANL F316—Alaska Native Languages: Indian Languages.....	3
ANS F202X—Aesthetic Appreciation of Alaska Native Performance .....	3
ANS F242—Native Cultures of Alaska .....	3

ANS F275—Yup'ik Practices in Spirituality and Philosophy .....	3
ANS F315—Tribal People Development .....	3
ANS/ANTH F320W—Language and Culture in Alaska .....	3
EBOT F200—Seminar in Ethnobotany .....	1
HIST F446—American Indian History .....	3
HIST F490W—Researching and Writing North American History .....	3
NORS F470—Oral Sources: Issues in Documentation .....	3
NORS F484W,O—Seminar in Northern Studies.....	3
RD F110—Alaska Native Claims Settlement Act: Land Claims in the 21st Century.....	1
RD F265—Perspectives on Subsistence in Alaska.....	3
RD F268—Rural Tourism: Planning and Principles .....	3
RD F280—Resource Management Research Techniques.....	3
RD F401—Cultural Knowledge of Native Elders.....	3
RD F425—Cultural Resource Issues .....	3
RD F430—Indigenous Economic Development and Entrepreneurship.....	3
RD F470—The Alaska Native Claims Settlement Act: Pre-1971 to present.....	3
RD F492—Rural Development Leadership Seminar (may earn up to six credits).....	1-3
<b>Indigenous Organization Management</b>	
Complete 21 credits from the following:**	
ABUS F232—Contemporary Management Issues .....	3
ABUS F263—Public Relations.....	3
ABUS F273—Managing a Small Business .....	3
ANS F310—Indigenous Land Settlements.....	3
ANS F325—Native Self Government.....	3
ANS/PS F425—Federal Indian Law and Alaska Natives.....	3
ANS F450—Comparative Indigenous Rights and Policies.....	3
BA F307—Introductory Human Resources Management .....	3
BA F317W—Employment Law .....	3
BA F457—Training and Management Development .....	3
NORS/PS F205—Leadership, Citizenship and Choice.....	3
NRM F101—Natural Resources Conservation Policy .....	3
NRM F464—Wilderness Management .....	3
RD F280—Resource Management Research Techniques.....	3
RD F401—Cultural Knowledge of Native Elders.....	3
RD F427—Tribal Contracting and Compacting.....	3
RD F430—Indigenous Economic Development and Entrepreneurship.....	3
RD F451—Human Resource Management for Indigenous Communities.....	3
RD F460—Women and Development .....	3
RD F492—Rural Development Leadership Seminar (may earn up to six credits).....	1-3
TM F101—Introduction to Tribal Government.....	3
TM F105—Introduction to Tribal Finance Applications .....	3
TM F120—Introduction to Tribal Natural Resource Management.....	3
TM F130—Introduction to Utility Management.....	2
TM F201—Advance Tribal Government.....	3
TM F205—Advanced Tribal Finance Applications.....	3
TM F225—Cross Connections: Adapting and Integrating Principles of Management Conservation.....	3
<b>Natural Resource Development</b>	
Complete 21 credits from the following:**	
ABUS F158—Introduction to Tourism .....	1-3
AMIT F101—Introduction to Mining.....	3
EBOT F100—Introduction to Ethnobotany.....	3
EBOT F200—Seminar in Ethnobotany .....	1
ENVI F101—Introduction to Environmental Science .....	3
FISH F101—Introduction to Fisheries.....	3
FISH F261—Introduction to Fisheries Utilization .....	3
HLRM F120—History of Domesticated Alaskan Ungulates.....	1
HLRM F140—High Latitude Range Management.....	2
NRM F101—Natural Resources Conservation and Policy.....	3
NRM F453—Harvesting and Utilization of Forest Products .....	3
NRM F461—Interpretive Services .....	3
NRM F464—Wilderness Management .....	3
RD F245—Fisheries Development in Rural Alaska .....	3
RD F255—Rural Alaska Land Issues.....	3
RD F265—Perspectives on Subsistence in Alaska.....	3
RD F268—Rural Tourism: Planning and Principles .....	3
RD F280—Resource Management Research Techniques.....	3
RD F425—Cultural Resource Issues .....	3
RD F430—Indigenous Economic Development and Entrepreneurship.....	3
RD F492—Rural Development Leadership Seminar (may earn up to six credits).....	1-3
TM F120—Introduction to Tribal Natural Resource Management.....	3
TM F170—Fundamentals of Rural Transportation .....	4
TM F225—Cross Connections: Adapting and Integrating Principles of Management Conservation.....	3
TM F271—Rural Transportation Planning.....	1
<b>Rural Community Business and Economic Development Planning</b>	
Complete 21 credits from the following:**	
ABUS F101—Principles of Accounting I.....	3
ABUS F151—Village Based Entrepreneurship .....	1-3
ABUS F154—Human Relations.....	3
ABUS F155—Business Math.....	1-3
ABUS F161—Personal and Business Finance .....	3
ABUS F272—Small-Business Planning .....	3
AMIT F101—Introduction to Mining.....	3
ANS/RD F315—Tribal People and Development .....	3
ANS F325—Native Self Government.....	3
ANS/PS F450—Comparative Indigenous Rights and Policies.....	3
CM F201—Construction Project Management .....	3
CM F202—Project Planning and Scheduling .....	3
NRM F101—Natural Resources Conservation and Policy.....	3
RD F110—Alaska Native Claims Settlement Act: Land Claims in the 21st Century.....	1
RD F250—Grant Writing for Community Development .....	1-3
RD F268—Rural Tourism: Planning and Principles .....	3
RD F427—Tribal Contracting and Compacting.....	3
RD F460—Women and Development .....	3
RD F470/670—The Alaska Native Claims Settlement Act: Pre-1971 to present.....	3
RD F492—Rural Development Leadership Seminar (may earn up to six credits).....	1-3
TM F170—Fundamentals of Rural Transportation .....	4
TM F171—Introduction to the Indian Reservation Roads Program .....	1
6. Minimum credits required .....	120
* Students must earn a C- grade or better in each course.	
** Concentration area and 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 relevant to the concentration area may be made with approval of the Rural Development faculty advisor.	
<b>Minor</b>	
1. Complete the following:	
Any three-credit RD course at the 300 level or above.....	3
RD electives at the F200 level or above.....	12
2. Minimum credits required .....	15

## RUSSIAN STUDIES

College of Liberal Arts  
Department of Foreign Languages and Literatures  
907-474-7396  
[www.uaf.edu/language/](http://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 127).
2. Complete the B.A. degree requirements (page 132).
3. Complete the following:\*  
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 F432—Studies of Russian Literature .....3
4. Complete two of the following Russian studies core requirements:\*  
RUSS F431—Studies in Russian Culture .....3  
RUSS F482—Selected Topics in Russian Literature .....3  
RUSS F484—Russian and Soviet Cinema .....3
5. 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 F461—History of Alaska .....3  
HIST F463—Imperial Russia, 1700-1917 .....3  
HIST F464—Soviet and Post-Soviet Russia .....3  
PS F468W—Government and Politics of Russia .....3
6. Minimum credits required .....120

\* Students must earn a C- grade or better in each course.

Note: Electives must include at least 12 upper-division credits. 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 15 credits from the Russian studies core or an advisor-approved combination from the Russian studies core and Russian studies electives.
2. Minimum credits required .....15

## SOCIAL WORK

College of Liberal Arts  
Department of Social Work  
907-474-7240  
[www.uaf.edu/socwork/](http://www.uaf.edu/socwork/)

### B.A. Degree

Minimum Requirements for Degree: 120 credits

We educate generalist social work practitioners to promote the health and well-being of individuals, families and communities, emphasizing the diversity and uniqueness of rural Alaska.

We create a community of critical thinkers dedicated to becoming competent, culturally sensitive professionals engaged in lifelong learning. We prepare students for generalist social work practice with individuals, families, groups, organizations and communities; to integrate the values and ethics of the social work profession into generalist

practice; to apply critical thinking to inform and communicate professional judgments; to engage diversity in generalist practice to advance human rights and advocate for social and economic justice; and to understand bio-psycho-social, spiritual, and cultural functioning and apply it to all client systems.

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 engage people on a personal level and are placed in a social service agency as part of their course work during the senior year. Students must apply to participate in a senior field placement and are required to complete a minimum of 400 hours over the course of two semesters in a social service agency practicing the skills learned in the program.

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 127. As part of the core curriculum requirements, complete SOC F100X or ANTH F100X; and BIOL F100X, F103X, F115X, F116X, F213X, or F214X.)
2. Complete the B.A. degree requirements. (See page 132. As part of the B.A. degree requirements, complete ANS/ANTH F242 and PSY F101.)
3. Complete 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 F440—Social Work Practice with Military Families .....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\*\* .....0 or 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 .....120

\* Students must earn a C- grade 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.

## 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

## SOCIOLOGY

College of Liberal Arts  
Department of Sociology  
907-474-5494  
[www.uaf.edu/sociology/](http://www.uaf.edu/sociology/)

### B.A. 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. Degree

The B.S. program is presently suspended.

1. Complete the general university requirements (page 127).
2. Complete the B.A. or B.S. degree requirements. (See page 132 or. As part of the baccalaureate core requirements, complete SOC F100X.)
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 Social 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 F309—Urban Sociology .....3  
SOC F310—Sociology of Aging.....3  
SOC/WGS F320—Sociology of Gender .....3  
SOC/PSY F330—Social Psychology.....3  
SOC/PSY F333/WGS F332—Human Sexualities Across Cultures ...3  
SOC F335—Deviance and Social Control .....3  
SOC/ED F345—Sociology of Education.....3  
SOC F350W—Sociology of Childhood .....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 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.uaf.edu/dms/](http://www.uaf.edu/dms/)

### Minor Only

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 F251X, F252X and F253X 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.

## TEACHING ENGLISH TO SPEAKERS OF OTHER LANGUAGES

College of Liberal Arts  
Department of Linguistics  
907-474-6585  
[www.uaf.edu/linguist/](http://www.uaf.edu/linguist/)

### Minor Only

The minor in teaching English to speakers of other languages will provide students with a theoretical and practical foundation for the teaching of English as a second language in the United States or as a foreign language in other countries. The curriculum will benefit students in foreign languages, linguistics, English, education and other fields of study who are interested in short- or long-term employment in the TESOL field.

## Minor

- Complete the following:\*
    - LING F101—Nature of Language.....3
    - LING F200—The Field of Teaching English to Speakers of Other Languages .....1
    - LING F302—Second Language Acquisition .....3
    - LING F315—The English Language for Second Language Teaching.....3
    - LING F410—Theory and Methods of Second Language Teaching.....3
    - LING F451—English Second Language Teaching Practicum .....3
  - Minimum credits required .....16
- Note: F400-level courses require junior standing or instructor permission.  
\* Students must earn a C- grade of better in every course except LING F200, which is graded on a pass/fail basis.

## TECHNOLOGY

Office of Interdisciplinary Programs  
907-474-7716

### B.T. Degree

Minimum Requirements for Degree: 120 credits

The Bachelor of Technology is an interdisciplinary degree program designed for students who have completed an Associate of Applied Science degree and who desire to enhance their knowledge, analytical abilities and critical thinking skills for upward mobility in the field.

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.

### Major — B.T. Degree

- Complete the general university requirements (page 127).
- Complete the B.T. degree requirements (page ##).
- Complete the following B.T. degree requirements:
  - ENGL F314W,O/2—Technical Writing .....3
  - MATH/CS/STAT elective at the F100 level or above.....3
- Complete a minimum of 30 credits of interdisciplinary studies approved by an advisory committee of at least three faculty members.\*
- Complete an Associate of Applied Science degree from an accredited institution of higher education.
- Minimum credits required .....120

\* Students must earn a C- grade or better in each course.

Note: At least 39 credits must be F300 level or above.

See Interdisciplinary Studies.

## THEATRE

College of Liberal Arts  
Department of Theatre and Film  
907-474-6590  
[www.uaf.edu/theatre/](http://www.uaf.edu/theatre/)

### B.A. Degree

Minimum Requirements for Degrees: 120 credits

The theatre and film 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.

Additional upper-division credits are required to complete the program.

### Major — B.A. Degree

#### Concentrations: Design/Technical Theatre, Directing, Performance

- Complete the general university requirements (page 127).  
*Please be advised: To graduate, all students must complete 39 upper-division credits. Some of these will be covered by the upper-division required courses for the Theatre, B.A., but not all of them. Theatre students will need to take upper-division electives (in Theatre or elsewhere) to complete the upper-division requirement.*
- Complete the B.A. degree requirements (page 132).
- Complete the following program (major) requirements:\*
  - 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—Beginning Costume Construction and Crafts .....3
  - THR F290—Audition or Portfolio Review Participation II.....0
  - THR F291—Audition or Portfolio Review Participation II .....0
  - THR F332—Stage Directing I.....3
  - THR F411W—Theatre History I.....3
  - THR F435—The Collaborative Process (3)  
or THR F499—Thesis (3) .....3

Note: Directing concentration majors must complete THR F499, not THR F435.

- Complete one of the following concentrations:\*

#### Design/Technical Theatre

- Complete the following:
  - THR F245—Stage Management.....3
  - THR/FLM F271—Let's Make a Movie.....3
- Complete three of the following:
  - THR F343—Scene Design.....3
  - THR/ART F347O—Lighting Design.....3
  - THR F348—Sound Design in the Entertainment Industry.....3
  - THR F356—Costume Design.....3
- Complete a minimum of 3 credits of the following:
  - THR F341—Intermediate Stagecraft .....3
  - THR F354—Intermediate Costume Construction.....3
  - THR F447—Lighting Design II .....3
  - THR F456—Advanced Topics in Costume Design and Construction .....3

#### Directing

- Complete the following:
  - THR F221—Acting II.....3
  - THR F245—Stage Management.....3
  - THR F432—Stage Directing II .....3
- Complete one of the following:
  - THR/FLM F271—Let's Make a Movie.....3
  - THR F320—Voice and Speech for the Actor .....3
  - THR F321—Acting III .....3
- Complete two of the following:
  - THR F343—Scene Design.....3
  - THR/ART F347O—Lighting Design.....3
  - THR F356—Costume Design.....3

#### Performance

- Complete the following:
  - THR F221—Acting II.....3
  - THR/FLM F310—Acting for the Camera.....3
  - THR F320—Voice and Speech for the Actor .....3

THR F321—Acting III .....	3
THR F423—Acting IV .....	3
b. Complete one of the following:	
THR F343—Scene Design .....	3
THR/ART F347O—Lighting Design .....	3
THR F348—Sound Design for the Entertainment Industry .....	3
THR F356—Costume Design .....	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
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\* Students must earn a C- or higher in each course.

\*\* 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 strongly encouraged to take at least 3 credits of upper-division theatre practicum to help fulfill the general university requirement of 39 upper-division credits. 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.

## WILDLIFE BIOLOGY AND CONSERVATION

College of Natural Science and Mathematics  
Department of Biology and Wildlife  
907-474-7671  
[www.bw.uaf.edu](http://www.bw.uaf.edu)

### B.S. Degree

Minimum Requirements for Degree: 120 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

- Complete the general university requirements. (See page 127. As part of the core curriculum requirements, complete COMM F141X.)
- Complete the B.S. degree requirements (page 132).
- Complete the following program (major) requirements:\*
  - 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 F260—Principles of Genetics .....	4
BIOL F310—Animal Physiology .....	4
BIOL F331—Systematic Botany (4) or BIOL F488—Arctic Vegetation Ecology: Geobotany .....	3
BIOL F371—Principles of Ecology .....	4
ENGL F314W,O/2—Technical Writing (3) or ENGL F414W—Research Writing (3) .....	3
WLF F101—Survey of Wildlife Science .....	1.5
WLF F301—Design of Wildlife Studies .....	3
WLF F322W—Principles and Techniques of Wildlife Management .....	3
WLF F410—Wildlife Populations and Their Management .....	3
WLF F460O/2—Wildlife Nutrition .....	4
  - Complete at least one of the following:
 

BIOL F471—Population Ecology .....	3
WLF F305—Wildlife Diseases .....	3
WLF F433—Conservation Genetics .....	3
WLF F469O—Landscape Ecology and Wildlife Habitat .....	3
  - Complete the following:
 

CHEM F105X—General Chemistry** .....	4
CHEM F106X—General Chemistry** .....	4
MATH F251X—Calculus (4)** or MATH F232X—Calculus for Life Sciences (3)** .....	3-4
PHYS F103X—College Physics (4) or GEOS F101X—The Dynamics of Earth (4) or NRM F380W—Soils and the Environment (3) .....	3-4
STAT F200X—Elementary Probability and Statistics (3)*** or STAT F300—Statistics (3)*** .....	3
STAT F401—Regression and Analysis of Variance .....	4
  - Complete at least one from each of the following pairs:
 

WLF F420O—Ecology and Management of Birds (3) or BIOL F426W,O/2 Ornithology (3) .....	3
WLF F421—Ecology and Management of Large Mammals (3) or BIOL F425—Mammalogy (3) .....	3
  - Complete two of the following:\*
 

NRM F204—Public Lands Law and Policy .....	3
ECON F235—Introduction to Natural Resources Economics .....	3
NRM F407—Environmental Law .....	3
HIST F411—Environmental History .....	3
PS F447—Environmental Politics .....	3
  - Complete at least two additional courses at the F300 level or higher (3 or 4 credits) in biology, wildlife biology, fisheries or natural resources management.\* .....

4. Minimum credits required .....	120
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\* Students must earn a C- grade 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 F325—Organic Chemistry (7)..... 4-7
  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 postbaccalaureate 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 F301—Design of Wildlife Studies .....3  
WLF F410—Wildlife Populations and their Management.....3  
WLF F460O/2—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 F371, BIOL F310, STAT F200X or F300, and WLF F322W. 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/](http://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:  
WGS F201—Introduction to Women's and Gender Studies .....3
2. Complete at least 12 additional credits from courses cross-listed with WGS [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/](http://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 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 127).
2. Complete the B.A. degree requirements (page 132).
3. Complete the following program (major) requirements.\*
  - a. Complete the following:  
ESK F130—Beginning Yup'ik Grammar .....3  
ESK F131—Beginning Yup'ik Grammar II.....3  
ESK F203—Conversational Central Yup'ik III .....3  
ESK F204—Conversational Central Yup'ik IV .....3  
ESK F205—Regaining Fluency in Yup'ik .....3  
ESK F206—Regaining Fluency in Yup'ik .....3  
ESK F208—Yup'ik Composition .....3  
ESK F240—Introduction to Reading Yup'ik.....3  
ESK F301—Advanced Central Yup'ik Grammar.....3  
ESK F330W—Central Yup'ik Literature  
(Yupiit Quliraitnek Igaryaraq).....3  
ESK F375O—Yup'ik Philosophy and Spirituality  
(Umyuarteqsaraq).....3  
ESK F488W—Documenting Cultural and Oral Traditions  
(Caliarka)q) .....3
  - b. Complete one of the following:  
ANS F401—Cultural Knowledge of Native Elders (3)  
ANS F461—Native Ways of Knowing .....3
4. Minimum credits required .....120

\* Students must earn a C- grade 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 course work are at [www.uaf.edu/advising/preprof/](http://www.uaf.edu/advising/preprof/). Contact the Academic Advising Center at 907-474-6396 or [uaf.advising@alaska.edu](mailto:uaf.advising@alaska.edu) for more information.

- Acupuncture and Oriental Medicine
- Architecture
- Audiology
- Chiropractic
- Dentistry
- Law
- Library Science
- Medicine (allopathic and osteopathic)
- Museum Studies
- Naturopathic Medicine
- Occupational Therapy
- Optometry
- Pharmacy
- Physical Therapy
- Physician Assistant
- Podiatry
- Speech/Language Pathology
- Veterinary Medicine



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Research Assistant Professor Anna Liljedahl, left, and graduate student Joanna Young set up a steam drill used to install stakes for measuring glacier melt on the Jarvis Glacier, about 35 miles south of Delta Junction.

# 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 28.

## 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 44 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**

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 a F400-level 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), at the graduate or F400-level in 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.

Additionally you must be registered in both the semester that you defend and the semester in which you receive your degree as per the requirements under Graduation on page 202.
- **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 previously earned undergraduate degrees. A minimum B grade (3.0) is required in all graduate courses presented for transfer. A P grade (pass) is not acceptable for transfer credit.
- **Credits Earned While Nondegree Seeking**

A student who earned post-baccalaureate degree credits while studying as a nondegree 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 nondegree 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 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. 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 additional 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 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 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. You are required to 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 a 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, if applicable.
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 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 participate at the project defense.

- **Defense of Thesis or Dissertation 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 or dissertation for final submission until the student has successfully defended it. The Ph.D. dissertation defense is to be conducted on the UAF campus. All committee members must participate in the defense of thesis or dissertation.

- **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. You must be registered for a minimum of 3 graduate credits within your discipline and maintain enrollment in the semester that you successfully defend your thesis, and you must be registered for a minimum of 1 graduate credit within your discipline and maintain enrollment during the semester that you graduate. Your Advancement to Candidacy must be received by the Graduate School the semester before you intend to graduate.

- **Application for Graduation**

You must file an application for graduation and a non-refundable fee with the Office of Admissions and the Registrar. We encourage you to work with your advisor/committee chair before applying for graduation to meet any departmental deadlines. 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/](http://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 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. Meet all requirements set forth in the General University Requirements section on page 199.
  - 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 MBA 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. Register as necessary and apply to graduate per the requirements noted in the Graduation section on page 202.
- i. Complete all degree requirements within the seven-year time limit.
- j. Archive thesis or project in the UAF Rasmuson Library

- **Credit Requirements**

1. Successfully complete a minimum of 30 semester credits, of which 21 semester credits must be at the graduate level, including thesis and research. Remaining credits may be applied from courses at the F400-level.
2. No F100-, F200-, F300-, or F500-level credits or audited courses may be applied toward master's degree requirements.
3. 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. Meet all requirements set forth in the General University Requirements section on page 199.
  - 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. Pass a written comprehensive exam.
  - 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. Satisfactorily complete a dissertation that is a substantial contribution to the body of knowledge in the area studied.
  - h. 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.
  - i. Apply for graduation and be registered for a minimum of 3 graduate credits within your discipline and maintain enrollment in the semester that you successfully defend your thesis and you must be registered for a minimum of 1 graduate credit within your discipline and maintain enrollment during the semester that you graduate.
  - j. Complete all degree requirements within the 10-year time limit.
  - k. Archive dissertation in the UAF Rasmuson Library.

- **Credit Requirements**

1. A minimum of 18 thesis (F699) 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).
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.
5. Archive the project in the UAF Rasmuson Library.

### 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.
5. Archive the project in the UAF Rasmuson Library.

### 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.
3. Archive the thesis or project in the UAF Rasmuson Library.

### MASTER OF EDUCATION

A general description is available in education.

### 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.
3. Archive the thesis or project in the UAF Rasmuson Library.

### MASTER OF FINE ARTS

A general description is available in creative writing (see English) and art.

### MASTER OF MUSIC PERFORMANCE

A general description is available in music performance.

## **MASTER OF NATURAL RESOURCES MANAGEMENT**

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 of the Western Interstate Commission for Higher Education. 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 Extension.

Additional information is available by email at [uaf-grad-school@alaska.edu](mailto:uaf-grad-school@alaska.edu) or by calling 907-474-7464.

# Graduate Degree Programs

## ANTHROPOLOGY

College of Liberal Arts  
Department of Anthropology  
907-474-7288  
[www.uaf.edu/anthro/](http://www.uaf.edu/anthro/)

### M.A., Ph.D. Degrees

Minimum Requirements for Degrees: M.A.: 30-36 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.

### M.A. Degree

Complete the admission process including the following:

1. Submit GRE scores.
2. Complete the general university requirements (page 199).
3. Complete the master's degree requirements (page 203).
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—Non-thesis Research/Project (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.*

### Ph.D. Degree

Complete the admission process including the following:

1. Submit GRE scores.
2. Complete the general university requirements (page 199).
3. Complete the Ph.D. degree requirements (page 204).
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 AND NORTHERN STUDIES

College of Liberal Arts  
907-474-7126  
Interdisciplinary  
[www.uaf.edu/northern/](http://www.uaf.edu/northern/)

### M.A. Degree

Minimum Requirements for Degree: 30 credits

The Arctic northern studies program offers an interdisciplinary study of Arctic and northern problems and policy issues. The purpose of the Arctic and northern studies program is to give interested students a broader study of the circumpolar region — its environment, peoples and challenges.

The geographic location of UAF is outstanding for the study of Arctic and northern issues. Students examine the countries and regions throughout the circumpolar North, and their distinctive challenges, 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 Arctic and northern regions. Many Arctic and northern studies students are seeking employment with northern agencies and want to develop a broad perspective on Arctic and 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, and is designed to be compatible with either full- or part-time graduate study.

The M.A. program offers four concentrations: northern history; Arctic policy; environmental politics and policy; and individualized study. Students of northern history benefit from the availability of the Alaska and circumpolar collections of the Rasmuson Library, UA Museum of the North and the Polar Regions Collection. The Arctic policy concentration addresses international, national and subnational policy structures and processes, as well as the aims of policies developed to address challenges in the Arctic region. The environmental politics and policy concentration focuses on political, social and

psychological responses to environmental change. The individualized study concentration allows students to create a concentration with the guidance of their graduate advisory committee.

The program offers a thesis or nonthesis 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 Russia and the Commonwealth of Independent States, see Study Abroad and International Exchange Programs on page 80.

### M.A. Degree

#### Concentrations: Individualized Study, Environmental Politics and Policy, Northern History, and Arctic Policy

1. Complete the general university requirements (page 199).
2. Complete the master's degree requirements (page 203).
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—Non-thesis Research/Project.....6  
NORS F699—Thesis ..... 6-12

6. Complete one of the following concentrations:

#### Individualized Study\*

Complete a total of 12 credits from the following:

- a. Course offerings selected from the relevant department\*\* and/or,
- b. Courses offered within the Northern Studies program, including those in the other concentrations (below) and/or,
- 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.*

### Arctic Policy\*

- a. Complete one of the following:  
PS F669—Arctic Politics and Governance.....3  
NORS F652—International relations of the North .....3
- b. Complete 12 credits from the following:\*  
PS F650—Comparative Aboriginal Rights.....3  
PS F660—Government and Politics of Canada .....3  
PS F662—Alaska Government and Politics.....3  
PS F668—Government and Politics of Russia .....3  
PS F669—Arctic Politics and Governance.....3

\* *Students may substitute 1 course from other PS graduate offerings, with the approval of their graduate committee chair.*

- c. Complete 6 credits from the following:\*\*  
ANTH F640—Northern Indigenous Peoples and Contemporary Issues .....3  
ECON F637—Natural Resource Policy .....3  
HIST F404—Modern Scandinavia.....3  
NORS F661/HIST F662—History of Alaska .....3  
NORS/HIST F664—Modern Russia .....3  
NORS/HIST F683—20th Century Circumpolar History.....3  
RD F601—Political Economy of the Circumpolar North .....3

\*\* *Students may substitute courses with approval of their graduate committee chair.*

7. Minimum credits required .....30

## ARCTIC ENGINEERING

College of Engineering and Mines  
Department of Civil and Environmental Engineering  
907-474-7241  
<http://cem.uaf.edu/cee/>

### M.S. Degree

**This program is presently suspended.**

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 sub-Arctic 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.

**M.S. Degree**

1. Complete the general university requirements (page 199).
  2. Complete the master’s degree requirements (page 203).
  3. Complete at least five of the following core courses:
    - CE F681—Frozen Ground Engineering .....3
    - CE F682—Ice Engineering (3) .....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
  4. CE F698 or F699— Non-thesis Research/Project or Thesis .....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.

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—M.F.A. Project\* (5) .....5
    - or ART F699—M.F.A. 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, F603, F605, F607, F609, F611, F613, F619,F633, F648, F671 F672, F684, JRN F605.
- Note: Graduate students are required to be enrolled in a mentored teaching section while teaching.

**ART**

College of Liberal Arts  
 Department of Art  
 907-474-7530  
[www.uaf.edu/art/](http://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.

**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 203).

**ATMOSPHERIC SCIENCES**

College of Natural Science and Mathematics  
 Department of Atmospheric Sciences  
 907-474-7368  
[www.uaf.edu/asp/](http://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, meso-scale 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.

**M.S. Degree**

1. Complete the general university requirements (page 199).
2. Complete the master’s degree requirements (page 203).
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

## Ph.D. Degree

1. Complete the general university requirements (page 199).
2. Complete the Ph.D. degree requirements (page 204).
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 NEUROSCIENCE

College of Natural Science and Mathematics  
Department of Chemistry and Biochemistry  
907-474-5510  
[www.uaf.edu/chem/](http://www.uaf.edu/chem/)

### Ph.D. Degree

Minimum Requirements for Degree: 18 thesis credits

Biochemistry and neuroscience 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. Students seeking a M.S. degree in these research areas should see the M.S. chemistry with concentration in biochemistry and neuroscience degree.

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.

### Ph.D. Degree with Biochemistry concentration

1. Complete the following admission requirements:
  - a. Submit GRE General Test scores
  - b. If English is not your native language, submit scores from both the Test of Spoken English and the Test of Written English, 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 199).
3. Complete the Ph.D. degree requirements (page 204).
4. Complete 3 courses from the following list:  
CHEM F654—Protein Structure and Function.....3  
CHEM F657—Molecular Foundations of Gene Expression.....3  
CHEM F674—Membrane Biochemistry and Biophysics.....3  
CHEM F670—Cellular and Molecular Neuroscience.....3  
CHEM F675—Cellular Signaling.....3
5. Complete three electives.
6. Complete Ph.D. dissertation.
7. Complete two seminar series (CHEM F692).
8. Minimum credits required (including core courses) .....38

## Ph.D. Degree with Neuroscience concentration

1. Complete the following admission requirements:
  - a. Submit GRE General Test scores
  - b. If English is not your native language, submit scores from both the Test of Spoken English and the Test of Written English, 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 199).
3. Complete the Ph.D. degree requirements (page 204).
4. Complete 3 courses from the following list:  
CHEM F654—Protein Structure and Function.....3  
CHEM F657—Molecular Foundations of Gene Expression.....3  
CHEM F674—Membrane Biochemistry and Biophysics.....3  
CHEM F670—Cellular and Molecular Neuroscience.....3  
CHEM F675—Cellular Signaling.....3
5. Complete three electives with two of the electives in neurosciences.
6. Complete Ph.D. dissertation in a field of neuroscience.
7. Complete two seminar series (CHEM F692).
8. Minimum credits required (including core courses) .....38  
See Chemistry B.A., B.S., and M.S. programs.  
See Environmental Chemistry.

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## BIOLOGICAL SCIENCES

College of Natural Science and Mathematics  
Department of Biology and Wildlife  
907-474-7671  
[www.bw.uaf.edu](http://www.bw.uaf.edu)

### M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 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 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.

**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 and the Test of Written English, 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 199).
3. Complete the M.S. — with Thesis degree requirements (page 205).
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

**Ph.D. Degree**

**Optional 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 and the Test of Written English, 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 199).
3. Complete the Ph.D. degree requirements (page 204).
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 postbaccalaureate programs, complete course work at least equivalent to that required for the M.S. degree.
5. Minimum credits required .....18  
For optional concentration see Wildlife Biology and Conservation.

**BUSINESS ADMINISTRATION**

School of Management  
907-474-4622  
[www.uaf.edu/som/degrees/graduate/mba/](http://www.uaf.edu/som/degrees/graduate/mba/)

**MBA 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.

All applications will be reviewed to determine if applicant has the required body of knowledge to begin MBA courses. Those deficient may be required to complete prerequisite modules prior to admission or prior to enrolling in specific courses.

**MBA Degree**

**Concentrations: Capital Markets, General Management**

1. Complete the admission process including the following:
  - a. Applications will be reviewed on a continuous basis
  - b. Students with a graduate degree from an accredited institution may be admitted without taking the GMAT or GRE exam.
  - c. UAF B.B.A. graduates with an overall GPA of 3.25 or above may be admitted without taking the GMAT or GRE exam. Those with GPA’s between 3.25 and 2.75 must submit results of the Watson-Glaser Critical Thinking exam. Those with GPA’s below 2.75 must submit results from the GMAT or GRE.
  - d. Non-UAF applicants with a bachelor’s degree in business from an AACSB-accredited institution and an overall GPA of 3.25 or above may be admitted without taking the GMAT or GRE. Those with GPA’s between 3.25 and 2.75 must submit results of the Watson-Glaser Critical Thinking exam. Those with GPA’s below 2.75 must submit results from the GMAT or GRE.
  - e. Applicants with non-business degrees and GPA’s from 4.00 to 2.75 must submit results of the Watson-Glaser Critical Thinking exam. Those with GPA’s below 2.75 must submit results from the GMAT or GRE.
2. Complete the general university requirements (page 199).
3. Complete the master’s degree requirements (page 203).
4. If a student earns grades of two Cs, one D, or one F in courses that are part of his/her MBA program, the student will no longer be in good standing in the MBA program even if his/her cumulative GPA remains at or above 3.0. MBA students who are not in good standing will be subject to review and may be dismissed by the MBA 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. Students with no prior course work in business subjects may be required to complete up to 7 self-study modules prior to beginning courses. Contact the SOM MBA program for more information. These are not UAF courses and will not count toward the 30 required program credits.
6. Complete the following MBA core courses after any required modules are completed:
 

MBA F617—Organizational Theory for Managers .....	3
MBA F643—Marketing Management.....	3
MBA F675—Quantitative Methods for Managers .....	3
MBA F680—Financial Markets and Strategy .....	3
7. Complete the following capstone course:
 

MBA F690—Corporate Strategy .....	3
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8. Complete one of the following concentrations:\*
 

**Capital Markets\*\***

  - a. Complete three of the following:
 

MBA F605—Contemporary Topics in Accounting.....	3
MBA F620—Portfolio Theory and Asset Pricing .....	3
MBA F624—Controllership.....	3
MBA F630—Derivative Securities .....	3
MBA F681—Fixed Income Securities and Markets.....	3
MBA F682—Financial Statement Analysis.....	3
  - b. Complete two approved electives at the F400 or F600 level.....6

## General Management

- a. Complete three of the following:
  - MBA F605—Contemporary Topics in Accounting.....3
  - MBA F607—Human Resources Management .....3
  - MBA F624—Controllership.....3
  - MBA F627—Business Law and Ethics .....3
  - MBA F632—Project Management .....3
  - MBA F642—Economics of Environmental and Business Sustainability .....3
  - MBA F665—Strategic Collaboration.....3
  - MBA F673—Innovation Management .....3
  - MBA F674—New Venture Development .....3
  - MBA F682—Financial Statement Analysis.....3
  - MBA F683—Advanced Topics in Marketing .....3
  - MBA 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.

\*\* This concentration may only be completed on the Fairbanks campus.

## CHEMISTRY

College of Natural Science and Mathematics  
Department of Chemistry and Biochemistry  
907-474-5510

[www.uaf.edu/chem/](http://www.uaf.edu/chem/)

### M.A., M.S. Degrees

**The M.A. program is presently suspended.**

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, biochemistry, neuroscience, and related interdisciplinary fields. Many recipients of chemistry master's degrees continue their education to obtain Ph.D. degrees at UAF or other universities. The M.S. program also has concentrations in the departmental focal areas of biochemistry and neuroscience and environmental chemistry. The department also offers Ph.D. degrees in each of these areas. See the biochemistry and neuroscience and environmental chemistry Ph.D. programs.

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.

### M.S. Degree

1. Complete the following admission requirements:
  - a. Submit GRE General Test scores.
  - b. If English is not your native language, submit scores from both the Test of Spoken English and the Test of Written English, 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 199).

3. Complete the master's degree requirements (page 203).
4. Complete a research-based thesis.
5. Complete seminar (CHEM F692).....2
6. Complete at least one semester of assisting in an undergraduate chemistry laboratory.
7. Minimum credits required .....30

### Optional Concentrations: Biochemistry and Neuroscience, Environmental Chemistry

#### M.S. Degree—Biochemistry and Neuroscience concentration

1. Complete the following admission requirements:
  - a. Submit GRE General Test scores.
  - b. If English is not your native language, submit scores from both the Test of Spoken English and the Test of Written English, 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 202).
3. Complete the master's degree requirements (page 206).
4. Complete three of the following:
  - CHEM F654—Protein Structure and Function.....3
  - CHEM F657—Molecular Foundations of Gene Expression .....3
  - CHEM F674—Membrane Biochemistry and Biophysics .....3
  - CHEM F670—Cellular and Molecular Neuroscience .....3
  - CHEM F675—Cellular Signaling .....3
5. Complete a research thesis.
6. Minimum credits required .....30

#### M.S. Degree—Environmental Chemistry concentration

1. Complete the following admission requirements:
  - a. Submit GRE General Test scores.
  - b. If English is not your native language, submit scores from both the Test of Spoken English and the Test of Written English, 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 202).
3. Complete the master's degree requirements (page 206).
4. Complete two of the following:
  - CHEM F605—Aquatic Chemistry.....3
  - CHEM F606—Atmospheric Chemistry.....3
  - CHEM F631—Environmental Fate and Transport .....3
  - CHEM F655—Environmental Toxicology .....3
5. Complete two seminar courses:
  - CHEM F691—Research Presentation Techniques.....1
  - CHEM F692—Seminar .....1
6. Complete approved electives\* .....3-6
7. Complete a research thesis .....12
8. Minimum credits required .....30

\* Approved electives are specified by the student's committee. The following tracks are defined as a guide. Within these tracks students will be expected to complete as part of the core and electives:

- i. Atmospheric Chemistry: CHEM F601, CHEM F605, CHEM F606 and CHEM F631
- ii. Aqueous/Environmental Geochemistry: CHEM F605, CHEM F606 or CHEM F631, GEOS F618 and CHEM F609/GEOS F633.
- iii. Environmental Toxicology and Contaminant Fate: CHEM F605 or CHEM F606, CHEM F631 and CHEM F655

A customized focus area may be developed based on an appropriate sequence of core and elective courses, subject to approval by the student's advisory committee.

See Biochemistry and Neuroscience.

See Environmental Chemistry.

## CIVIL ENGINEERING

College of Engineering and Mines  
Department of Civil and Environmental Engineering  
907-474-7241  
<http://cem.uaf.edu/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.

### 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 199).
3. Complete the master's degree requirements (page 203).
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.*

### 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 199).
3. Complete the master's degree requirements (page 203).
4. Complete a thesis..... 6-12
5. Minimum credits required .....30  
See Arctic Engineering.  
See Engineering for Ph.D. program.  
See Engineering Management.  
See Environmental Engineering and Environmental Quality Science.  
See Science Management.

## COMMUNICATION, PROFESSIONAL

College of Liberal Arts  
Department of Communication  
907-474-6591  
[www.uaf.edu/comm/](http://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.

### M.A. Degree

1. Complete the following additional admission requirement: Submit academic writing sample.
2. Complete the general university requirements (page 199).
3. Complete the master's degree requirements (page 203).
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](http://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.

### M.S. Degree

- Complete the UAF admission process including the following:
  - Submit GRE general and computer science subject exam scores.
  - For teaching assistantship consideration, foreign applicants whose native language is not English must submit a TOEFL score of at least 600.
  - The department gives preference to applicants who also submit results of the Test of Spoken English.
- Complete the general university requirements (page 199).
- Complete the master's degree requirements (page 203).
- Complete the following:
 

CS F600—Professional Software Development .....	4
CS F601—Algorithms, Architecture and Languages .....	4
CS F690—Graduate Seminar and Project .....	3
CS F691—Graduate Seminar and Project .....	3
Approved electives.....	16
- Minimum credits required .....30

## COUNSELING

School of Education  
 907-474-7341  
[www.uaf.edu/educ/graduate/](http://www.uaf.edu/educ/graduate/)

### M.Ed. Degree

Minimum Requirements for Degree: 48-54 credits  
 School Counselor certification: 39 or 45 credits

The University of Alaska Graduate Counseling Program prepares students to become culturally responsive effective practitioners through course work 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—Practicum in Individual Counseling and COUN F674—Group Counseling on the Fairbanks campus. These courses are offered in alternating summers.

### M.Ed. Degree

- Complete the following admission requirements:
  - Applications will be reviewed on March 1 and October 1 for admission to the following semester.
  - 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.
  - Applicants must have a GPA of 3.0 or higher in their undergraduate degree or take the Graduate Record Exam.
- Complete the general university requirements (page 199).
- Complete the master's degree requirements (page 203).
- Complete internship placements appropriate to the student's declared area of interest.
- Complete the following:
 

COUN F615—Foundations of Counseling.....	3
COUN F623—Counseling Theories and Applications I.....	3
COUN F627—Developmental Interventions* (3) .....	3
or COUN F629—Counseling Interventions for Adults (3).....	3
COUN F628—Child and Adolescent Development.....	3
COUN F632—Career Development .....	3
COUN F630—Appraisal for Counselors .....	3
COUN F634—Practicum in Individual Counseling.....	3
COUN F636—Internship I** .....	3
COUN F647—Professional Ethics .....	3
COUN F660—Cross-Cultural Counseling .....	3
COUN F674—Group Counseling.....	3
COUN F686—Internship II** .....	3
COUN F698—Non-thesis Research/Project (3-6) .....	3-6
or COUN F699—Thesis (6) .....	3-6
ED F601—Introduction to Applied Social Science Research.....	3
- Complete the following classes for school counseling track:
 

COUN F646—School Counseling .....	3
Elective credits .....	3
- Complete the following for K-12 school counseling track (elementary and secondary):
 

COUN F646—School Counseling .....	3
COUN F687—Internship III** .....	3
COUN F688—Internship IV** .....	3

8. Complete the following classes for community counseling track:
    - COUN F638—Adult Development .....3
    - COUN F650—Cross Cultural Psychopathology .....3
    - COUN F666—Family and Network Therapy .....3
    - COUN F687—Internship III\*\* .....3
  9. Minimum credits required .....48-54
- \* School Counseling students must complete COUN F627—Developmental Interventions.
- \*\* Additional fee required. Charges are added to fee statements each semester.
- 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 requirements for certification in one level (Elementary or Secondary):
    - COUN F615—Foundations of Counseling .....3
    - COUN F623—Counseling Theories and Applications I .....3
    - COUN F627—Developmental Interventions .....3
    - COUN F628—Child and Adolescent Development .....3
    - COUN F632—Career Development .....3
    - COUN F630—Appraisal for Counselors .....3
    - COUN F634—Practicum in Individual Counseling .....3
    - COUN F636—Internship I\*\* .....3
    - COUN F646—School Counseling .....3
    - COUN F647—Professional Ethics .....3
    - COUN F660—Cross-Cultural Counseling .....3
    - COUN F674—Group Counseling .....3
    - COUN F686—Internship II\*\* .....3
  3. Complete the following additional classes for K-12 school counseling certification (Elementary and Secondary):
    - COUN F687—Internship III\*\* .....3
    - COUN F688—Internship IV\*\* .....3
  4. Minimum credits required .....39 or 45
- \*\* Additional fee required. Charges are added to fee statements each semester. Students must take 15 UAF credits. Up to 30 graduate transfer credits from a previous degree program may be applied, as approved by the School of Education counseling program.

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. Examples of approved electives:
  - 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—Non-thesis Research/Project .....6
11. Minimum credits required .....36

## DESIGN AND CONSTRUCTION MANAGEMENT

College of Engineering and Mines  
 Department of Civil and Environmental Engineering  
 907-474-7241  
<http://cem.uaf.edu/cee/>

### Graduate Certificate

Minimum Requirements for Certificate: 15 credits

The graduate certificate in design and 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 Certificate

1. Complete the following admission requirements:
  - a. A four-year ABET college degree in engineering and at least two years' construction management 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 management experience.
2. Complete the general university requirements (page 199), and
  - a. 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. Complete a graduate study plan after completing 5 credits.

## CROSS-CULTURAL STUDIES

College of Liberal Arts  
 Center for Cross-Cultural Studies  
 907-474-1902  
[www.uaf.edu/cxcs/](http://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.

### M.A. Degree

1. Complete the general university requirements (page 199).
2. Complete the master's degree requirements (page 203).
3. Complete at least 6 credits in a field setting, including minimum of one week camp with elders.

3. Complete the graduate certificate requirements (page 203).
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
    - MBA 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
    - MBA 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

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—Non-thesis Research/Project.....3
        - Electives at the F600 level.....6
        - Electives.....6
      - b. Minimum credits required .....33
- \* Complete at least 25 credits at the F600 level.

## ECONOMICS, RESOURCE AND APPLIED

School of Management  
Department of Economics  
907-474-7461

[www.uaf.edu/som/degrees/graduate/msecon/](http://www.uaf.edu/som/degrees/graduate/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 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.

### M.S. Degree

1. Complete the general university requirements (page 199).
2. Complete the master's degree requirements (page 203).

## EDUCATION

School of Education  
907-474-7341  
[www.uaf.edu/educ/](http://www.uaf.edu/educ/)

### M.Ed. Degree and Postbaccalaureate Licensures

Minimum Requirements for Art K-12 Licensure: 34 credits;  
Elementary Postbaccalaureate Licensure: 39 credits;  
Secondary Postbaccalaureate Licensure: 31-37 credits;  
Special Education K-12 Postbaccalaureate Licensure Program  
Certificate of Completion: 24-27 credits;  
M.Ed.: 30-39 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 postbaccalaureate 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 Alaska, 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 and/or the Computer-Based Academic Skills Assessment. For additional information, visit the website of the State Department of Education and Early Development at [www.eed.state.ak.us/TeacherCertification/](http://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 postbaccalaureate 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 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 218) for the secondary postbaccalaureate licensure program.

Admission to the K-12 Art 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 F600 level.

For information on the application process, acceptance to the program and professional field experience, please refer to the secondary postbaccalaureate licensure program toward M.Ed. section in the catalog.

**Admission Process and Requirements**

Applicants will follow the admission process and requirements listed in the catalog (page 218) for the secondary postbaccalaureate 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:
  - ED F452O—Elementary Internship .....3
  - ED F453O—Secondary Internship .....3
  - ED F649—Elementary Art Methods .....3
  - EDSC F402—Methods of Teaching in the Secondary School.....3
  - EDSC F415—Foundations of Modern Educational Practices (3)
    - or EDSE F205—Introduction to Secondary Education (3) .....3
  - EDSC F614—Learning, Development and Special Needs Instruction (3)
    - or EDSE F622—Curriculum, Management and Strategies II: High Incidence (3)
  - EDSC F636—Secondary Art Instruction and Assessment .....3
  - EDSC F642—Technology Applications in Education I .....1
  - EDSC F643—Technology Applications in Education II .....2
  - EDSC F657—Multicultural Education and School-Community Relations .....4
  - EDSC F658—Classroom Organization and Management .....3
  - PSY F240—Psychology of Development (3)
    - or PSY F245—Child Development (3) .....3
2. Minimum credits required .....34

**Elementary (K-8) Postbaccalaureate Licensure Program**

This program is offered in Fairbanks and College of Rural and Community Development campus service areas. The elementary teacher postbaccalaureate 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 F316 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 postbaccalaureate course work to avoid losing credits for the M.Ed. degree. (See M.Ed. elementary education options requirements.) Candidates who enter the elementary postbaccalaureate 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. 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 postbaccalaureate 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 or Praxis Core ASE exam in reading, writing and mathematics and score from Praxis II Elementary Content exam (test 0014 or 5014).
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.

**Program Requirements**

1. During the summer semester complete the following graduate level credits; or complete ED F110, F201, F330, F344 and EDSE F316 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 .....2  
ED F478/F678—Mathematics Methods and Curriculum Development .....3  
ED F479/F688—Science Methods and Curriculum Development ...3

3. During the spring semester complete the following:  
ED F414—Art, Music and Drama in the Elementary Classroom .....3  
ED F417—Physical Education and Health Education for Elementary Teachers.....3  
ED F468O—Internship and Student Teaching .....4  
ED F469—Synthesizing the Standards II .....2  
ED F476—Literacy Development Profiles .....1
4. Minimum credits required .....39

**Secondary Postbaccalaureate Licensure Program toward M.Ed., Secondary Education**

Program is offered in Fairbanks and in areas served by the College of Rural and Community Development 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 postbaccalaureate 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](http://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 postbaccalaureate licensure program are required to have use of/own laptop computers before they begin their internships in the fall semester of their professional year. Candidates are expected to be proficient in Windows Office software, including, but not limited to, word processing, spreadsheets and presentation software.

**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 postbaccalaureate 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 Alaska School District. Generally, this option is available only to those candidates in areas of teacher shortage. Candidates complete the secondary postbaccalaureate licensure program over a period of 24 months.

**Admissions Process and Requirements**

Admission to the secondary postbaccalaureate 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 F600 level.

Submit the following information to the UAF Office of Admissions and the Registrar:

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. GRE 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 or Praxis Core ASE 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.pdf](http://www.eed.state.ak.us/TeacherCertification/pdf/Content_Area_Exams.pdf)).
  - b. World language exams: Applicants applying to teach a world language are required to submit Praxis II scores in the target language **and** for the ACTFL Oral Proficiency Interview and Test. Applicants must meet the Advanced Low rating for both tests ([www.languagetesting.com](http://www.languagetesting.com)). In the target language, write a 2-3 page, well organized, coherent response to one of three prompts (contact SOE secondary program for additional information)
4. Demonstrated evidence of content competency in one of the UAF-approved secondary endorsement areas: art, biology, Earth science, economics, English, French, German, political science, history, mathematics, physics and Spanish.
  - 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/](http://www.uaf.edu/educ/secondary/admissions/)).
6. Applicants must submit a placement packet; contact the School of Education for specifics. The School of Education determines placement approval, change or termination.
7. All applicants will be required to interview with secondary faculty as part of the admission process.

### Application Review Process

Applications are due March 1 (summer or fall admissions) and October 15 (spring admissions), and are reviewed thereafter for admission. 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 postbaccalaureate 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 postbaccalaureate 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;
- some school districts require completion of district substitute training which may include a fee, a finger print card and AST background check; and
- State of Alaska Certificate of Authorization, fingerprint cards and money order in the amount of \$60 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 Postbaccalaureate 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 Postbaccalaureate 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 Postbaccalaureate Licensure program does not guarantee and internship placement.

### Program Requirements

- Complete the following for secondary licensure:
    - EDSC F402—Methods of Teaching in the Secondary School.....3
    - EDSC F407—Developing Literacy in the Content Areas.....3
    - EDSC F415—Foundations of Modern Educational Practices (3)  
or EDSC F205—Introduction to Secondary Education (3).....3
    - EDSC F614—Learning, Development and Special Needs  
Instruction (3)  
or EDSE F622—Curriculum, Management and Strategies II:  
High Incidence (3)
    - 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 I .....1
    - EDSC F643—Technology Applications in Education II.....2
    - 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 .....3-9
  - Minimum credits required .....31-37
- \* Candidates must take the section or course that corresponds with their major teaching content areas.

### Special Education K-12 Postbaccalaureate 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: learner development and individual learning differences, learning environments, curricular content knowledge, assessment, instructional planning and strategies, professional learning and ethical practice and collaboration. The program will provide individuals who already possess, or are eligible for, a current Alaska teaching certificate or a bachelor's degree and 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. Special education candidates will

progress through a series of developmentally sequenced field experiences for all ages, types and levels of abilities, including collaborative opportunities.

The program 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 for Certified Teachers

- Complete the following admission requirements:
    - Admission requirements for the graduate program.
    - Current teaching certificate or equivalent course work towards an Alaska teaching certificate.
  - Prerequisite: EDSE F482—Inclusive Classroom for All Children or comparable transfer course from another institution .....3
  - Complete the general university requirements (page 199).
  - Complete the following:
    - EDSE F610—Assessment of Students with Disabilities.....3
    - EDSE F612—Curriculum, Management and Strategies I:  
Low Incidence .....3
    - EDSE F622—Curriculum, Management and Strategies II:  
High Incidence.....3
    - EDSE F625—Teaching Mathematics to Special Learners.....3
    - EDSE F632—Special Education Law: Principles and Practices.....3
    - EDSE F677—English Language Arts Assessment, Curriculum  
and Strategies for Special Learners .....3
    - EDSE F680—Special Education Clinical Practice\*+.....3
  - Complete one of the following electives:
    - EDSE F605—Early Childhood Special Education.....3
    - EDSE F624—Social/Emotional Development, Assessment  
and Intervention.....3
    - EDSE F633—Autism and Other Developmental Disabilities:  
Communication and Social Interventions .....3
    - EDSE F640—Collaboration and Consultative Methods .....3
    - EDSE F642—Autism Spectrum Disorders and Other Developmental  
Disabilities: Sensory and Behavioral Interventions .....3
    - EDSE F648—FASD: Diagnosis, Intervention and Strategies.....33
  - Minimum credits required .....24
- \* Additional fee required. Charges are added to fee statements every semester.
- + Students pursuing a K-12 Special Education certificate must complete clinical practice in a public school setting.

### Program Requirements for Initial Certification

- Complete the following admission requirements:
  - Admission requirements for the graduate program.
  - Baccalaureate degree along with the following prerequisites:
    - Documented recent experience (minimum 12 hours) in an educational setting with children experiencing disabilities.
    - UAF prerequisite courses or comparable transfer courses:
      - 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).....3
      - EDSE F482—Inclusive Classroom for all Children .....3
    - An Alaska studies course approved by the Alaska Department of Education and Early Development. See <http://education.alaska.gov/teachercertification/>.
    - A multicultural education/cross-cultural communication course approved by the Alaska Department of Education and Early Development. See <http://education.alaska.gov/teachercertification/>.

- v. Passing scores on the Praxis Academic Skills for Educators (or Praxis I) or another test acceptable to the Alaska Department of Education and Early Development before or during the first semester of classes. Current test numbers and minimum scores can be found at [www.eed.state.ak.us/teacherscertification/prof.html](http://www.eed.state.ak.us/teacherscertification/prof.html).
  - vi. Passing scores on the appropriate Praxis II Exam(s) required before entering EDSE F678—Special Education Clinical Practice: Initial. Current test numbers and minimum scores can be found at [www.eed.state.ak.us/teacherscertification/prof.html](http://www.eed.state.ak.us/teacherscertification/prof.html). Candidates should consult the employing school district to determine preferred tests based on teaching assignment.
2. All prerequisite courses must be completed with a minimum final grade of B. Once the admission requirements, prerequisite courses and testing requirements have been met, applicants will be formally admitted to the program.
  3. Complete the general university requirements (page 199).
  4. 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 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.
  5. Complete the following:
 

EDSE F610—Assessment of Students with Disabilities.....	3
EDSE F612—Curriculum, Management and Strategies I: Low Incidence .....	3
EDSE F622—Curriculum, Management and Strategies II: High Incidence.....	3
EDSE F625—Teaching Mathematics to Special Learners.....	3
EDSE F632—Special Education Law: Principles and Practices.....	3
EDSE F677—English Language Arts Assessment, Curriculum and Strategies for Special Learners.....	3
EDSE F678—Special Education Clinical Practice: Initial.....	3
EDSE F680—Special Education Clinical Practice*+.....	3
  6. Complete one of the following electives:
 

EDSE F605—Early Childhood Special Education.....	3
EDSE F624—Social/Emotional Development, Assessment and Intervention.....	3
EDSE F633—Autism and Other Developmental Disabilities: Communication and Social Interventions .....	3
EDSE F640—Collaboration and Consultative Methods .....	3
EDSE F642—Autism Spectrum Disorders and Other Developmental Disabilities: Sensory and Behavioral Interventions .....	3
EDSE F648—FASD: Diagnosis, Intervention and Strategies.....	33
  7. Minimum credits required\*\*\* .....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 in a public school setting.

### M.Ed. Degree

The School of Education offers Master of Education degrees in counseling, special education and education. Students in the education major may earn a degree in these areas of specialization: cross-cultural education, curriculum and instruction, language and literacy, and online innovation and design. Students completing postbaccalaureate certification in elementary or secondary education may earn an

M.Ed. in the respective area. For elementary education, secondary education, special 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.\*

### 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 GRE if undergraduate GPA is below 3.0. 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.
3. Submit official transcripts.
4. Submit three letters of reference.
5. 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 199).
2. Complete M.Ed. degree requirements (page 205).
3. Complete the admission requirements for the Master of Education Degree.
4. Complete the following:
 

ED F601—Introduction to Applied Social Science Research.....	3
ED/CCS F603—Field Study Research Methods (3) or ED/CCS F604—Documenting Indigenous Knowledge (3) .....	3
ED F682—Rethinking Multicultural Education .....	3
ED F698—Non-thesis Research/Project (6) or ED F699—Thesis (6) .....	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/CCS F616—Education and Socioeconomic Change.....	3
ED F620—Language, Literacy and Learning .....	3
ED/CCS F631—Culture, Community and Curriculum .....	3
6. Complete at least 12 credits of approved electives in cross-cultural education in consultation with the student's graduate advisory committee.....12
7. Minimum credits required .....30

## Master of Education in Curriculum and Instruction

### Program Requirements

1. Complete the general university requirements (page 199).
2. Complete M.Ed. degree requirements (page 205).
3. Complete the admissions requirements for the Master of Education degree.
4. Complete the following:
  - ED F601—Introduction to Applied Social Science Research.....3
  - ED/CCS F603—Field Study Research Methods (3)
    - or ED/CCS F604—Documenting Indigenous Knowledge(3) .....3
  - ED F612—Foundations of Education .....3
  - ED F630—Curriculum Development.....3
  - ED F659—Multimedia Tools for Educators .....3
  - ED F686—Assessment and Testing in K-12 School.....3
  - ED F698—Non-thesis Research/Project (6)
    - or ED F699—Thesis (6) .....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/CCS F616—Education and Socioeconomic Change.....3
  - ED F620—Language, Literacy and Learning .....3
  - ED/CCS F631—Culture, Community and Curriculum .....3
  - ED F682—Rethinking Multicultural Education .....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, postbaccalaureate elementary licensure program, students can pursue a M.Ed. degree in elementary education if they choose to do so. Fifteen 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 F316 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 199).
2. Complete M.Ed. degree requirements (page 205).
3. Complete the admission requirements for the graduate-level elementary postbaccalaureate licensure program.
4. Complete the following:
  - 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.....3
  - ED F688—Science Methods and Curriculum Development .....3
  - ED F601—Introduction to Applied Social Science Research.....3
  - ED/CCS F603—Field Study Research Methods (3) .....3
  - or ED/CCS F604—Documenting Indigenous Knowledge (3) .....3
  - ED F698—Non-thesis Research/Project (6)
    - or ED F699—Thesis (6) .....6
5. Complete one graduate-level elective course approved by candidate's graduate committee.....3
6. Minimum credits required .....30

## Master of Education in Language and Literacy

### Program Requirements

1. Complete the general university requirements (page 199).
2. Complete M.Ed. degree requirements (page 205).
3. Complete the admission requirements for the Master of Education degree.
4. Complete the following:
  - ED F601—Introduction to Applied Social Science Research.....3
  - ED/CCS F603—Field Study Research Methods (3)
    - or ED/CCS F604—Documenting Indigenous Knowledge (3) .....3
  - LING F602—Second Language Acquisition .....3
  - LING F610—Theory and Methods of Second Language Learning...3
  - ED F620—Language, Literacy and Learning .....3
  - ED F698—Non-thesis Research/Project (6)
    - or ED F699—Thesis (6) .....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/CCS F616—Education and Socioeconomic Change.....3
  - ED/CCS F631—Culture, Community and Curriculum .....3
  - ED F682—Rethinking Multicultural Education .....3
6. Complete two F600-level education elective course.....6
7. Minimum credits required .....30

## Master of Education in Online Innovation and Design

### Program Requirements

1. Complete the general university requirements (page 199).
2. Complete M.Ed. degree requirements (page 205).
3. Complete the admission requirements for the Master of Education degree.
4. Complete the following:
  - ED F431—Web 2.0 Fundamentals .....3
  - ED F601—Introduction to Applied Social Science Research.....3
  - ED F650—Current Topics in Educational Technology: Innovative Instruction and Leadership.....3
  - ED F654—Digital Citizenship, Internet Legal Issues, Digital Copyright and Fair Use .....3
  - ED F659—Multimedia Tools for Educators .....3
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/CCS F616—Education and Socioeconomic Change.....3
  - ED F620—Language, Literacy and Learning .....3
  - ED/CCS F631—Culture, Community and Curriculum .....3
  - ED F682—Rethinking Multicultural Education .....3
6. Complete the following for the thesis option:
  - One F600-level Online Innovation and Design Elective (3)
  - ED/CCS F603—Field Study Research Methods (3)
    - or ED/CCS F604—Documentation Indigenous Knowledge (3).....3
  - ED F699—Thesis.....6
7. Complete the following for the project option:
  - One F600-level Online Innovation and Design Elective (3)
  - ED/CCS F603—Field Study Research Methods (3)
    - or ED/CCS F604—Documentation Indigenous Knowledge (3).....3
  - ED F698—Non-thesis Research/Project .....6

8. Complete the following classes or comparable electives approved by the student's graduate advisory committee for the comprehensive exam option:
  - ED F653—Instructional Design.....3
  - ED F655—Online Pedagogy.....3
  - ED F676—Supporting Learning in Diverse Systems.....3
  - ED F677—Digital Storytelling.....3
  - Complete the comprehensive examination.....0
9. Minimum credits required.....30

### Master of Education in Secondary Education

Following the completion of the year-long UAF secondary postbaccalaureate 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 Postbaccalaureate 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 199).
2. Complete the M.Ed. degree requirements (page 205).
3. Complete the admission requirements for the graduate-level secondary postbaccalaureate licensure program.
4. Complete the following:
  - EDSC F402—Methods of Teaching in the Secondary School (3) or one elective course approved by candidate's graduate committee (3).....3
  - EDSC F614—Learning, Development and Special Needs Instructions (3) or EDSE F622—Curriculum, Management and Strategies II: High Incidence (3).....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).....3
  - EDSC F642—Teaching with Technology I.....1
  - EDSC F643—Technology Applications in Education II.....2
  - EDSC F657—Multicultural Education and School-Community Relations.....4
  - EDSC F658—Classroom Organization and Management.....3
  - 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) or ED/CCS F604—Documenting Indigenous Knowledge (3).....3
  - ED F699—Thesis.....6
6. Complete the following for the Project option:
  - ED/CCS F603—Field Study Research Methods (3) or ED/CCS F604—Documenting Indigenous Knowledge (3).....3
  - ED F698—Non-thesis Research/Project.....6

7. Complete the following for the Comprehensive Exam option:
  - EDSC F407—Developing Literacy in the Content Areas (3) or one elective course approved by candidate's graduate committee (3).....3
  - Six graduate-level elective credits approved by candidate's graduate committee.....6
  - 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: learner development and individual learning differences, learning environments, curricular content knowledge, assessment, instructional planning and strategies, professional learning and ethical practice and collaboration.

The program will provide individuals who already possess, or are eligible for, a current Alaska teaching certificate or a bachelor's degree and 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. Special education candidates will progress through a series of developmentally sequenced field experiences for all ages, types and levels of abilities including collaborative opportunities.

The Master of Education in Special Education 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 for Certified Teachers

1. Complete the following admission requirements:
  - a. Admission requirements for the graduate program.
  - b. Current Alaska teaching certificate or equivalent course work towards an Alaska teaching certificate.
2. Prerequisite: EDSE F482—Inclusive Classroom for All Children or comparable transfer course from another institution.....3
3. Complete general university requirements.
4. Complete the M.Ed. degree requirements.
5. Complete the following:
  - EDSE F610—Assessment of Students with Disabilities.....3
  - EDSE F612—Curriculum, Management and Strategies I: Low Incidence.....3
  - EDSE F622—Curriculum, Management and Strategies II: High Incidence.....3
  - EDSE F625—Teaching Mathematics to Special Learners.....3
  - EDSE F632—Special Education Law: Principles and Practices.....3
  - EDSE F677—English Language Arts Assessment, Curriculum and Strategies for Special Learners.....3
  - EDSE F680—Special Education Clinical Practice\*+.....3
6. Complete three of the following elective courses as approved by the candidate's graduate committee:
  - EDSE F605—Early Childhood Special Education.....3
  - EDSE F624—Social/Emotional Development, Assessment and Intervention.....3
  - EDSE F633—Autism and Other Developmental Disabilities: Communication and Social Interventions.....3
  - EDSE F640—Collaboration and Consultative Methods.....3
  - EDSE F642—Autism Spectrum Disorders and Other Developmental Disabilities: Sensory and Behavioral Interventions.....3
  - EDSE F648—FASD: Diagnosis, Intervention and Strategies.....3

7. Complete the following:  
ED F601—Introduction to Applied Social Science Research.....3  
ED F603—Field Study Research Methods (3)  
or ED/CCS F604—Documenting Indigenous Knowledge (3) .....3
8. Complete comprehensive examination.\*\*
9. 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 clinical practice in a public school setting*
- \*\* *Must be enrolled in 3 graduate credits the semester the comprehensive exam is completed.*

### Program Requirements for Initial Certification

1. Complete the following admission requirements:
  - a. Admission requirements for the graduate program.
  - b. Baccalaureate degree along with the following prerequisites:
    - i. Documented recent experience (minimum of 12 hours) in an educational setting with children experiencing disabilities.
    - ii. UAF prerequisite course or comparable transfer courses:  
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).....3  
EDSE F482—Inclusive Classrooms for All Children.....3
    - iii. An Alaska studies course approved by the Alaska Department of Education and Early Development. See <http://education.alaska.gov/teachercertification/>.
    - iv. A multicultural education/cross-cultural communication course approved by the Alaska Department of Education and Early Development. See <http://education.alaska.gov/teachercertification/>.
    - v. Passing scores on the Praxis Academic Skills for Educators text (or Praxis I) or another test acceptable to the Alaska Department of Education and Early Development before or during the first semester of classes. Current test numbers and minimum scores can be found at [www.eed.state.ak.us/teacherscertification/prof.html](http://www.eed.state.ak.us/teacherscertification/prof.html).
    - vi. Passing scores on the appropriate Praxis II Exam(s) required before entering EDSE F678—Special Education Clinical Practice: Initial. Current test numbers and minimum scores can be found at [www.eed.state.ak.us/teacherscertification/prof.html](http://www.eed.state.ak.us/teacherscertification/prof.html). Candidates should consult the employing school district to determine preferred tests based on teaching assignment.
2. All prerequisite courses must be completed with a minimum final grade of B. Once the admission requirements, prerequisite courses and testing requirements have been met, applicants will be formally admitted to the program.
3. Complete the general university requirements (page 199).
4. Complete the M.Ed. degree requirements (page 205)
5. 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 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.

6. Complete the following:
 

EDSE F610—Assessment of Students with Disabilities.....3
EDSE F612—Curriculum, Management and Strategies I: Low Incidence .....3
EDSE F622—Curriculum, Management and Strategies II: High Incidence.....3
EDSE F625—Teaching Mathematics to Special Learners.....3
EDSE F632—Special Education Law: Principles and Practices.....3
EDSE F677—English Language Arts Assessment, Curriculum and Strategies for Special Learners.....3
EDSE F678—Special Education Clinical Practice: Initial.....3
EDSE F680—Special Education Clinical Practice*+.....3
7. Complete three of the following elective courses as approved by the candidate's graduate committee:
 

EDSE F605—Early Childhood Special Education.....3
EDSE F624—Social/Emotional Development, Assessment and Intervention.....3
EDSE F633—Autism and Other Developmental Disabilities: Communication and Social Interventions .....3
EDSE F640—Collaboration and Consultative Methods .....3
EDSE F642—Autism Spectrum Disorders and Other Developmental Disabilities: Sensory and Behavioral Interventions .....3
EDSE F648—FASD: Diagnosis, Intervention and Strategies.....3
8. Complete the following courses:
 

ED F601—Introduction to Applied Social Science Research.....3
ED F603—Field Study Research Methods (3) or ED/CCS F604—Documenting Indigenous Knowledge (3) .....3
9. Complete comprehensive examination\*\*
10. Minimum credits required .....39
- \* *Additional fee required. Charges are added to fee statements every semester.*
- + *Students pursuing a K-12 Special Education certificate must complete clinical practice in a public school setting.*
- \*\* *Must be enrolled in 3 graduate credits the semester the comprehensive exam is completed.*

### 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  
<http://cem.uaf.edu/ece/>

### M.S. Degree

#### The M.E.E. program is presently suspended.

Minimum Requirements for Degree: 30 credits

The M.E.E. degree program is designed for the practicing professional engineer, and focuses on a major project. The M.S. degree includes a written thesis and oral defense for 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 years and a Ph.D. in another three years.

Graduate degree programs in electrical and computer engineering are closely connected with faculty research activities. 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 on campus and at Poker Flat Research Range—the only university-operated rocket range in the world. The Sounding Rocket Laboratory provides opportunities for developing instrumentation for sounding rocket payloads. The Arctic Region Supercomputing Center on campus provides a wide array of tools for digital system research. Department research laboratories include 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, such as the use of acoustic, light and radio wave techniques for measuring fish in Alaska rivers to the geophysical properties of the aurora. Remote sensing for biomedical (animal tracking) and environmental (groundwater and air monitoring) applications is an important research area for Alaska. Electric power systems research includes issues related to isolated rural Alaska communities, analysis of larger interconnected generation, transmission and distribution systems serving major Alaska 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.

**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 199).
  4. Complete the master’s degree requirements (page 203).
  5. 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.*

**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 199).

4. Complete the master’s degree requirements (page 203).
  5. Minimum credits required .....30\*
- \* *At least 24 credits must be at the F600 level.*  
See Engineering for Ph.D. program.

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**ENGINEERING**

College of Engineering and Mines  
907-474-7241  
<http://cem.uaf.edu/academics/programs/>

**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.

**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 199).
3. Complete the Ph.D. degree requirements (page 204).
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  
<http://cem.uaf.edu/cee/>

### M.S. Degree

**This program is presently suspended.**

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.

### 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 199).
3. Complete the master's degree requirements (page 203).
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  
MBA 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)  
MBA 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/](http://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 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.

### 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 199).
3. Complete the master's degree requirements (page 203).
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—Theory, Criticism and Methods.....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:  
 Required courses and distribution of electives in a, c, d and e in the thesis option .....21  
 Additional approved ENGL F600-level electives .....9  
 ENGL F698—Non-thesis Research/Project (maximum) .....6  
 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

\* Required 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.

#### Creative Writing, M.F.A. Degree

- Complete the following admission requirements:
  - Submit GRE scores.
  - Submit creative writing sample.
- Complete the general university requirements (page 199).
- Complete the master's degree requirements (page 203).
- 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.
- Students may advance to candidacy when their advisory committee deems that they have made satisfactory progress in both academic and writing areas.
- Complete the following:
 

ENGL F601—Theory, Criticism and Methods.....	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 F600-level elective course (3).....	3
ENGL F699—Thesis .....	6
ENGL approved electives.....	6
Literature seminars**.....	12
- 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
ENGL F688—Writing for Film and Television .....	3

8. Minimum credits required .....45

\* Required 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 courses meet the literature-seminar requirement for the M.F.A. 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 M.F.A. 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.

#### M.F.A./M.A. Combined Degree in Creative Writing and Literature

- 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;
- Fulfill all general university requirements and master's degree requirements and all course requirements within both programs (double counting allowed);
- Pass comprehensive examinations in both programs;
- Complete a thesis required for an M.F.A. degree and
  - a thesis required for an M.A. degree,
  - 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,
  - OR a scholarly essay on a topic approved by the advisory committee(s) and likewise judged as publishable.
- Pass an oral examination of materials submitted from 4 above.
- 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/](http://www.uaf.edu/chem/)

#### Ph.D. Degree

Minimum Requirements for Degree: 18 thesis credits

Environmental chemistry focuses 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. The common link 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 also provides a quantitative and fundamental approach to understanding the processes that influence the quality of the environment.

The Department of Chemistry and Biochemistry offers B.S. and M.S. via concentrations under the chemistry degree. The program provides education and research opportunities focused on the molecular scale aspects of environmental science. The program defines three tracks to meet a wide range of student interest: (i) atmospheric chemistry, (ii) aqueous/environmental geochemistry, and (iii) environmental toxicology and contaminant fate. Students may also design a custom focus area, subject to approval by their advisory committee.

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 Reichardt Building on the Fairbanks campus that houses state-of-the-art classrooms, laboratories and computer facilities to support education and research activities. Located in Interior Alaska, UAF is home to numerous research institutes and center 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 Ph.D. program in environmental chemistry provides advanced training in the concepts and methods of molecular environmental sciences 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. dissertation, which is a body of independent research that presents new findings on forefront topics related to molecular processes in the environment. The Ph.D. in environmental chemistry prepares students for careers in academia or the public and private research sectors. Graduate students in the environmental chemistry program are typically supported through teaching and research assistantships or fellowships. Students interested in a M.S. degree focusing on environmental chemical problems should see the M.S. Chemistry with concentration in Environmental Chemistry program.

#### Ph.D. Degree

- Complete the following admission requirements
    - Submit GRE General Test scores
    - If English is not your native language, submit scores from both the Test of Spoken English and the Test of Written English, as well as TOEFL scores. Requests, including justification, for exceptions to this requirement should be made to the chair of the department.
  - Complete the general university requirements (page 199).
  - Complete the Ph.D. degree requirements (page 204).
  - Complete three of the following:
 

CHEM F605—Aquatic Chemistry.....	3
CHEM F606—Atmospheric Chemistry.....	3
CHEM F631—Environmental Fate and Transport .....	3
CHEM F655—Environmental Toxicology .....	3
  - Complete two seminar courses.
 

CHEM F691—Research Presentation Techniques.....	1
CHEM F692—Seminar.....	1
  - Complete approved electives\*.....3-6
  - Complete a thesis.....18
  - Minimum credits required .....32
- \* *Approved electives are specified by the student's committee. The following tracks are defined as a guide. Within these tracks students will be expected to complete as part of the core and electives:*
- Atmospheric Chemistry: CHEM F601, CHEM F605, CHEM F606 and CHEM F631*
  - Aqueous/Environmental Geochemistry: CHEM F605, CHEM F606 or CHEM F631, GEOS F618 and CHEM F609/GEOS F633.*
  - Environmental Toxicology and Contaminant Fate: CHEM F605 or CHEM F606, CHEM F631 and CHEM F655*  
*A customized focus area may be developed based on an appropriate sequence of core and elective courses, subject to approval by the student's advisory committee.*
- See Biochemistry and Neuroscience.  
See Chemistry.

## ENVIRONMENTAL ENGINEERING AND ENVIRONMENTAL QUALITY SCIENCE

College of Engineering and Mines  
 Department of Civil and Environmental Engineering  
 907-474-6129  
<http://cem.uaf.edu/cee/environmental-engineering/>

### 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.

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.

### Environmental Engineering, M.S. Degree

This program is presently suspended.

- Complete the following admission requirements:
  - Complete the equivalent of a UAF course in basic computer techniques.
  - 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).
  - Complete a B.S. in engineering from an ABET accredited institution with a GPA of 3.0 or higher.
- Complete the general university requirements (page 199).
- Complete the master's degree requirements (page 203).
- Complete the thesis or non-thesis requirements for one of the environmental engineering and environmental quality science concentration areas listed below.

### Environmental Quality Science, M.S. Degree

- Complete the following admission requirements:
  - Complete the equivalent of one year of UAF courses in calculus and general chemistry, and one semester of computer techniques.
  - 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).
  - Complete a B.S. in science from an accredited institution with a GPA of 3.0 or higher.
- Complete the general university requirements (page 199).
- Complete the master's degree requirements (page 203).
- Complete the thesis or non-thesis requirements for one of the environmental engineering and environmental quality science concentration areas listed below.

### Concentrations: Environmental Contaminants, Environmental Science and Management, Water Supply and Waste Treatment

#### Environmental Contaminants

- 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—Non-thesis Research/Project (3) or ENVE F699—Thesis .....	6
Approved electives** .....	6-9
  - 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—Non-thesis Research/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—Non-thesis Research/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/](http://www.sfos.uaf.edu/academics/)

### M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits;  
 Ph.D.: 18 thesis credits

Fisheries graduate students take classes and undertake research on a diverse set of fisheries-related topics. Program strengths include quantitative science, fisheries management and human dimensions, biology and ecology, and seafood technology. Students are typically

based in Juneau, Fairbanks or Kodiak, but most courses are video-delivered to locations throughout Alaska.

Traditionally, the Juneau location emphasizes the marine environment; Fairbanks, the freshwater; and Kodiak, seafood science. However, students at each location are engaged in a wide variety of research topics. All locations have excellent laboratory facilities, access to pristine environments and healthy fisheries, and strong connections to state and federal agency scientists and managers as well as to participants in commercial, sport and subsistence fisheries.

Most students are supported as research assistants for some or all of their tenure. Agencies such as the National Atmospheric and Oceanic Administration, the U.S. Fish and Wildlife Service, and the Alaska Department of Fish and Game are collaborators on research projects and employ many of our graduates.

### M.S. Degree

1. Complete the following admission requirements:
  - a. Prerequisites: calculus; elementary statistics; ichthyology, biology of fish or invertebrate zoology; and computer competency.
  - b. Submit GRE scores.
2. Complete the general university requirements (page 199).
3. Complete the master's degree requirements (page 203).
4. Complete the following:
  - FISH F699—Thesis ..... 6-12
  - STAT F401—Regression and Analysis of Variance .....4
  - Graduate seminars .....2
5. Complete one emphasis area:
 

#### Fisheries Emphasis

Students must complete one of the following under each area:

  - a. Biology and ecology of fish and shellfish
    - FISH F612—Fish Conservation Biology .....4
    - FISH F626—Behavioral Ecology of Fishes .....3
    - FISH F628—Physiological Ecology of Fishes.....3
    - FISH F633—Pacific Salmon Life Histories.....3
    - FISH F650—Fish Ecology .....3
    - FISH F651—Fishery Genetics.....4
    - FISH F676/MSL F676—Aquatic Food Web Ecology.....3
    - MSL F615—Physiology of Marine Organisms.....3
    - MSL F640—Fisheries Oceanography.....4
    - MSL F652—Marine Ecosystems.....3
  - b. 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
  - c. 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 F645—Bioeconomic Modeling and Fisheries Management .....3
    - FISH F670—Quantitative Analysis for Marine Policy Decisions .....3
    - FISH F675—Political Ecology of the Oceans.....3

### Seafood Science Emphasis

Students must complete one course from two of the three core areas of the Fisheries emphasis and the two following courses:

- FISH F661—Seafood Processing and Preservation.....3
- FISH F662—Seafood Composition and Analysis.....3

6. Minimum credits required .....30
- Note: Only 9 credits of the required 30 M.S. degree credits can be at the F400 level.

## 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 199).
3. Complete the Ph.D. degree requirements (page 204).
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.

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## GEOLOGICAL ENGINEERING

College of Engineering and Mines  
Department of Mining and Geological Engineering  
907-474-7388  
<http://cem.uaf.edu/mingeo/>

### 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, geo-physical 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.

### M.S. Degree

1. Complete the following:
  - a. Complete one of the following admission requirements:
    - i. Complete a bachelor's degree in geological engineering; or
    - ii. Complete a bachelor's degree in engineering and complete the following courses: GEOS F262 and GEOS F332, or GEOS F322 and GEOS F314; GE F365 or MIN F370; GE F405 and GE F420; or

- iii. Complete a bachelor's degree in geology and complete the following courses: ES F208, ES F331, ES F341; GE F365 or MIN F370; GE F405, GE F420, and MIN F408; or
- iv. Complete a bachelor's degree in the natural sciences and complete the following: ES F208, ES F331, ES F341; GEOS F262 and GEOS F332 or GEOS F322 and GEOS F314; GE F365 or MIN F370; GE F405, GE F420, and MIN F408.

- b. Submit GRE scores.
2. Complete the general university requirements (page 199).
  3. Complete the master's degree requirements (page 203).
  4. Complete the thesis or non-thesis requirements:

#### Thesis

- a. Complete 12 credits from the following:

GE F430—Geomechanical Instrumentation .....	3
GE F440—Slope Stability .....	3
GE F610—Subsurface Hydrology.....	3
GE F620—Advanced Groundwater Hydrology .....	3
GE F622—Advanced Soil Physics.....	3
GE F624—Stochastic Hydrology and Geohydrology.....	3
GE F626—Thermal Geotechniques.....	3
GE F635—Advanced Geostatistical Applications .....	3
GE F665—Advanced Geological Materials Engineering .....	3
GE F666—Advanced Engineering Geology .....	3
GE F668—Tunneling Geotechniques .....	3
MIN F621—Advanced Mineral Economics.....	3
MIN F673—Advanced Rock Mechanics.....	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 .....

#### Non-Thesis

- a. Complete 15 credits from the following:

GE F430—Geomechanical Instrumentation .....	3
GE F440—Slope Stability .....	3
GE F610—Subsurface Hydrology.....	3
GE F620—Advanced Groundwater Hydrology .....	3
GE F622—Advanced Soil Physics.....	3
GE F624—Stochastic Hydrology and Geohydrology.....	3
GE F626—Thermal Geotechniques.....	3
GE F635—Advanced Geostatistical Applications .....	3
GE F665—Advanced Geological Materials Engineering .....	3
GE F666—Advanced Engineering Geology .....	3
GE F668—Tunneling Geotechniques .....	3
MIN F621—Advanced Mineral Economics.....	3
MIN F673—Advanced Rock Mechanics.....	3
- b. Geological engineering courses and technical electives..... 11
- c. Minimum credits required .....

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## GEOLOGY

College of Natural Science and Mathematics  
Department of Geosciences  
907-474-7565  
[www.uaf.edu/geology/](http://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.

### 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 199).
3. Complete the master's degree requirements (page 203).
  - 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**  
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.
  - **General Geology**  
Complete 12 credits at the F600 level as approved by the graduate advisory committee.
  - **Petroleum Geology**  
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.
  - **Quaternary Geology**  
Complete 9 credits in Quaternary geology and at least one course in another area of Quaternary studies, as approved by the graduate advisory committee.
  - **Remote Sensing**  
Complete GEOS F654 or GEOS F657 and 10 credits in remote sensing-related courses, as approved by the graduate advisory committee.
  - **Volcanology**  
Complete 12 credits at the F600 level in volcanology-related courses, as approved by the graduate advisory committee.
7. Minimum credits required .....30

### Ph.D. Degree

1. Complete the following admission requirement:
  - a. Submit GRE scores.
2. Complete the general university requirements (page 199).
3. Complete the course work requirements for the appropriate M.S. concentration.
4. Complete the Ph.D. degree requirements (page 204).
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 Geosciences  
907-474-7565  
[www.uaf.edu/geology/](http://www.uaf.edu/geology/)

### M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits;  
Ph.D.: 18 thesis credits

The geophysics program at UAF is closely connected with the Geophysical Institute and is optimally positioned to investigate a wide array of geophysical phenomena. Students have the option to obtain a general geophysics degree or to choose of the of three concentrations to focus their studies.

Upon graduation, a student is expected to be able to:

1. address geophysical problems using the principles of conservation of energy, mass and momentum using both physical and mathematical concepts, particularly with respect to mathematical techniques such as linear algebra, vector calculus and partial differential equations;
2. explain physical processes underlying the Earth's global scale features, including plate tectonics and the gravitational and magnetic fields;
3. describe common geophysical problems and assess the advantages and disadvantages of various theoretical, modeling or observational approaches to solving them, including identifying key assumptions underlying each approach;
4. frame well-defined scientific research questions and apply modern computational methods and observational techniques necessary to conduct the research;
5. publish and present results in peer-reviewed articles, scientific reports, and at national and international scientific meetings using oral and written skills developed through regular faculty feedback.

### 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 F302 (Differential Equations)
  - d. Recommended: MATH F314 (Linear Algebra), MATH F421 (Applied Analysis), PHYS F220 (Introduction to Computational Physics)

2. Complete the general university requirements (page 199).
3. Complete the master's degree requirements (page 203).
  - 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 the following geophysics core requirements:
 

GEOS F631—Foundations of Geophysics .....	4
GEOS F682—Geoscience Seminar (fall semester).....	1
7. Complete 6 credits from relevant graduate-level courses agreed by the advisory committee, or choose one of the following concentrations:

#### Solid-Earth Geophysics

Complete 6 credits from the following:

GEOS F604—Seismology .....	3
GEOS F605—Geochronology.....	3
GEOS F626—Applied Seismology .....	4
GEOS F613—Global Tectonics.....	3
GEOS F655—Tectonic Geodesy .....	3
GEOS F671—Volcano Seismology .....	3

#### Snow, Ice and Permafrost Geophysics

Complete 6 credits from the following:

GEOS F614—Ice Physics.....	3
GEOS F615—Sea Ice.....	3
GEOS F616—Permafrost.....	3
GEOS F617—Glaciers.....	3

#### Remote Sensing

Complete 6 credits from the following:

GEOS F654—Visible and Infrared Remote Sensing.....	3
GEOS F657—Microwave Remote Sensing .....	3
GEOS F622—Digital Image Processing in the Geosciences .....	3
GEOS F676—Remote Sensing of Volcanic Eruptions.....	3
GEOS F639—InSAR and its Applications .....	3
ATM F613—Atmospheric Radiation.....	3

8. Complete 7 credits of courses approved by the advisory committee
9. The minimum credits required is 30. The required M.S. course work above represents 18 credits. The minimum number of thesis credits (GEOS F699) required is 6. The remaining 6 credits can either be thesis credits or credits from courses that are F400-level or higher.

#### Ph.D. Degree

1. Complete the following admission requirement:
  - a. Submit GRE scores.
2. Complete a master's degree in geology, geophysics or an appropriate field of physical science or engineering.
3. Complete the general university requirements (page 199).
4. Complete the M.S. requirements 6 and 7 above (11 credits).
5. Complete 3 credits each in two of the following advanced skills categories (total 6 credits):
  - a. Digital signal analysis and remote sensing
 

GEOS F654—Visible and Infrared Remote Sensing.....	3
GEOS F657—Microwave Remote Sensing .....	3
GEOS F622—Digital Image Processing in the Geosciences .....	3
PHYS F628—Digital Time Series Analysis.....	3
  - b. Statistics and parameter estimation
 

GEOS F627—Inverse Problems and Parameter Estimation.....	3
STAT F401—Regression and Analysis of Variance .....	3
STAT F461—Applied Multivariate Statistics.....	3
ATM F610—Analysis Methods in Meteorology and Climate.....	3

- c. Mathematical methods
 

MATH F421—Applied Analysis.....	4
MATH F614—Numerical Linear Algebra .....	3
MATH F615—Numerical Analysis of Differential Equations.....	3
MATH F661—Optimization .....	3
ME F601—Finite Element Analysis in Engineering.....	3
- d. One graduate-level advanced skills course approved by the student's advisory committee
6. Complete the Ph.D. degree requirements (page 204).
7. 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.
8. The minimum credits required is 35. This includes 18 thesis credits and 17 credits from course work (11 from M.S., 6 from Ph.D.).

#### Admission to Ph.D. geophysics program directly from a 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. For direct admission from the baccalaureate to the Ph.D. program, a student must receive approval from the graduate admission committee and also meet one of three criteria:

- a. At least one first-authored manuscript published, accepted or submitted for publication in a peer-reviewed scientific journal
- b. Receipt of an NSF, NIH or similar prestigious pre-doctoral fellowship.
- c. Demonstrated research proficiency AND either (1) attained a GPA of at least 3.5 in mathematics and science courses at the undergraduate level, or (2) scored at or above the 80th percentile in two of three categories in the GRE. The requirement of demonstrated research proficiency can be waived for exceptionally promising students. In this case the student is required to complete a research or review paper focusing on a thesis-related topic approved by the graduate advising committee. The paper should be roughly 4,000-5,000 words and must be submitted and approved by the advising committee within the first three semesters to maintain Ph.D. status. Failure will result in changing the student's status to M.S. candidate.

After admission, M.S. candidates may, in exceptional cases, petition for conversion to the Ph.D. program if they satisfy one of the above criteria. 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.

## INDIGENOUS STUDIES

College of Liberal Arts  
 College of Rural and Community Development  
 School of Education  
 907-474-7464  
[www.uaf.edu/cxcs/indigenoussphd/](http://www.uaf.edu/cxcs/indigenoussphd/)

#### 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.

**Ph.D. Degree**

1. Complete the general university requirements (page 199).
2. Complete the Ph.D. degree requirements (page 204).
  - 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 F604—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 .....
  - f. Complete doctoral dissertation
 

ANL/CCS/ED/RD F699—Thesis.....	18
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3. Minimum credits required .....

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  
[www.uaf.edu/gradsch/classes/interdisciplinary-program/](http://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 for interdisciplinary students is available at 907-474-7464 or see [www.uaf.edu/gradsch/classes/interdisciplinary-program/](http://www.uaf.edu/gradsch/classes/interdisciplinary-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 199).
3. Complete the master's degree requirements (page 204).
4. Pass a comprehensive examination.
5. Minimum credits required .....

**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 199).
3. Complete the Ph.D. degree requirements (page 204).
4. Pass written and oral comprehensive exams.
5. Minimum credits required .....

**JUSTICE, ADMINISTRATION OF**

College of Liberal Arts  
Justice Program  
907-474-5500  
[www.uaf.edu/justice/](http://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.

### M.A. Degree

1. Complete the general university requirements (page 199).
2. Complete the master's degree requirements (page 203).
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—Non-thesis Research/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/](http://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 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 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.

### M.A. Degree

1. Complete the general university requirements (page 199).
2. Complete the master's degree requirements (page 203).
3. Complete the following core courses:
  - LING F600—Research Methods .....3
  - LING F601—Principles of Linguistic Analysis .....3
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—Non-thesis Research/Project (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/](http://www.sfos.uaf.edu/academics/)

### 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 Kodiak Seafood and Marine Science Center 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.

### M.S. Degree

1. Complete the following admission requirement:
    - a. Submit GRE scores.
  2. Complete the general university requirements (page 199).
  3. Complete the master's degree requirements (page 203).
  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 an acceptable substitution** (4).....	4
MSL F692—Seminar.....	3
  6. Minimum credits required .....30
- \* Students must earn a B- grade or better in the core courses of the degree program before being eligible to take the comprehensive exam.
- \*\* The following is the official GPMSL policy regarding acceptable substitutions for MSL F651—Marine Biology Field Course to meet the field course requirement for the M.S. marine biology program:
- a. A combination of MSL F421—Subtidal Studies (2 credits) plus a minimum of eight days (for 2 credits through a pre-approved independent study course) aboard an oceanographic vessel or a coastal field station conducting biological research unrelated to the student's thesis research, if approved in advance by the Graduate Advisory Committee, Master's Comprehensive Exam Committee, and the chief scientist of the cruise. (Note: Assuming the student spends 10 hours per day on the vessel/field station, the student will accumulate 80 hours of experience, which is equivalent to a 2-credit lab course.) To obtain approval for this last substitution, the chief scientist of the cruise/field station must submit a memorandum to the Master's Comprehensive Exam Committee stating that the student will spend at least eight days at sea substantially involved in a variety of cruise activities that are not related to the student's thesis research, or
  - b. MSL F656—Kelp Forest Ecology (3), or
  - c. MSL F697—Individual Study – Field Problems in Marine Biology (4). Please see department for specific details on course requirements.

### Ph.D. Degree

1. Complete the following admission requirement:
    - a. Submit GRE scores.
  2. Complete the general university requirements (page 199).
  3. Complete the Ph.D. degree requirements (page 204).
  4. Complete course work at least equivalent to that required for the M.S. degree\*.
  5. Minimum credits required .....18
- \* Students must earn a B- grade or better in the M.S. core courses of the degree program before being eligible to complete the qualifying exam required for this program.

## MATHEMATICS

College of Natural Science and Mathematics  
 Department of Mathematics and Statistics  
 907-474-7332  
[www.uaf.edu/dms/](http://www.uaf.edu/dms/)

### M.S., Ph.D. Degrees

Minimum Requirements for Degrees: 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 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.

The Department of Mathematics and Statistics also offers programs in statistics (see separate listings).

### M.S. Degree

1. Complete the following admission requirements:
  - a. Submit three letters of recommendation addressing the applicant's educational background, mathematical ability, and research and teaching potential.
  - b. Submit undergraduate transcripts.
  - c. Submit a resume and written statement of goals.
2. Complete the general university requirements (page 199).
3. Complete the master's degree requirements (page 203) including a written comprehensive exam.
4. Complete the following core courses:
 

MATH F631—Algebra I.....	4
MATH F641—Real Analysis.....	4
MATH F645—Complex Analysis.....	4
MATH F651—Topology.....	4
5. Complete a project or thesis.
6. Minimum credits required .....30-35  
*Note: For admission to the graduate school, students who are non-native speakers of English are required to submit either TOEFL or IELTS scores. While not required, submission of GRE general test scores is recommended.*

### Ph.D. Degree

1. Complete the following admission requirements:
  - a. Submit three letters of recommendation addressing the applicant's educational background, mathematical ability, and research and teaching potential.
  - b. Submit undergraduate and, if applicable, graduate transcripts.
  - c. Submit a resume and written statement of goals.
2. Either submit transcripts indicating the completion of a master's degree in mathematics or a related area, or compete all the requirements for the M.S. degree in mathematics, including a project or thesis which initiates study of the Ph.D. research area.
3. Pass the Ph.D. qualifying exam.
4. Complete the general university requirements (page 199).

5. Complete the Ph.D. degree requirements (page 204).
6. Minimum credits required .....36  
*Note: For admission to the graduate school, students who are non-native speakers of English are required to submit either TOEFL or IELTS scores. While not required, we recommend the submission of GRE mathematics subject test scores as part of the application for all students.*

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## MECHANICAL ENGINEERING

College of Engineering and Mines  
 Department of Mechanical Engineering  
 907-474-7136  
<http://cem.uaf.edu/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.

### M.S. Degree

1. Complete the following admission requirement:
  - a. Submit GRE scores.
2. Complete the general university requirements (page 199).
3. Complete the master's degree requirements (page 203).
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

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—Non-thesis Research/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.

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## MINERAL PREPARATION ENGINEERING

College of Engineering and Mines  
 Department of Mining and Geological Engineering  
 907-474-7388  
<http://cem.uaf.edu/mingeo/>

### M.S. Degree

This program is presently suspended.

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## MINING ENGINEERING

College of Engineering and Mines  
 Department of Mining and Geological Engineering  
 907-474-7388  
<http://cem.uaf.edu/mingeo/>

### M.S. Degree

Minimum Requirements for Degree: 30-36

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.

### M.S. Degree

1. Complete the general university requirements (page 199).
2. Complete the master's degree requirements (page 203).
3. Complete the following:
 

MIN F688—Graduate Seminar I.....	1
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4. Complete the thesis or non-thesis requirements:
 

<b>Thesis</b>	
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—Non-thesis Research/Project .....6
- b. Minimum credits required .....36

students (including UAF or UAA baccalaureate graduates) must take these preliminary examinations.

- \*\* After completing about one semester of the program, students will meet with their advisory committee to define precisely their degree course work. Each student, with the approval of the advisory committee, will develop an appropriate final research project, write a project paper and successfully defend that paper under the supervision of the advisory committee.

**MUSIC PERFORMANCE**

College of Liberal Arts  
 Department of Music  
 907-474-7555  
[www.uaf.edu/music/](http://www.uaf.edu/music/)

**M.Mu. Degree**

**Admissions to this program are presently suspended.**

Minimum Requirements for Degree: 36 credits

A student’s Master of Music Performance degree program is determined by the student in coordination with the student’s graduate advisory committee. Each graduate student’s program is designed to support the student’s individual professional interests and aspirations, consistent with program requirements. The Master of Music Performance degree program emphasizes academic achievement and superior musicianship through music performance. In addition to the curriculum, recitals and concerts provide students with a variety of musical experiences and performance opportunities. The Department of Music is accredited in good standing through the National Association of Schools of Music.

**M.Mu. Degree**

- 1. Complete the following admission requirements:
  - a. Performance audition, demonstrating knowledge and ability in solo literature of various historical periods and styles. Audition may be either a live performance or a performance recorded and submitted in an unedited video format (DVD or online).
  - b. Diagnostic examinations in music theory and history.\*
- 2. Complete the general university requirements (page 199).
- 3. Complete the master’s degree requirements (page 203).\*\*
- 4. Complete the following:
  - MUS F601—Introduction to Graduate Study.....2
  - MUS F625—Topics in Music History .....3
  - MUS F632—Topics in Music Theory .....3
  - MUS F698—Non-thesis Research/Project.....6
- 5. Complete at least 22 credits in a primary area of specialization, including large ensembles, small ensembles and private lessons.
- 6. No more than 12 credits of MUS F697 are allowed.
- 7. Students with specialization in vocal performance 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 Music Handbook concerning recital preparation, recital jury pre-hearings, and jury examinations.
- 8. Successfully complete the performance of a graduate music recital.
- 9. Successfully complete an oral defense of an approved research project paper.
- 10. Minimum credits required .....36

\* These diagnostic exams identify strengths and deficiencies in music theory, music history and music literature. Applicants will be accepted from any accredited institution; however, before admission to a degree program, all

**NATURAL RESOURCES AND SUSTAINABILITY**

School of Natural Resources and Extension  
 School of Management  
 907-474-7188  
[www.uaf.edu/snre/](http://www.uaf.edu/snre/)  
[www.uaf.edu/som/](http://www.uaf.edu/som/)

**Ph.D. Degree**

Minimum Requirements for Degree: 26 credits

The joint Ph.D. program in natural resources and sustainability prepares future leaders as academic researchers, agency professionals and analysts of nongovernmental 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 require 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 Extension 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.

Additional application requirement: Students are required to have a faculty sponsor upon entering the program. A letter of support from an SOM or SNRE faculty member in addition to three letters of recommendation must be submitted with the graduate application.

**Ph.D. Degree**

- 1. Complete the general university requirements (page 199).
- 2. Complete the Ph.D. degree requirements (page 204).
- 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 F647—Global to Local Sustainability.....3
    - NRM F649—Integrated Assessment and Adaptive Management ....3
    - NRM F692—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 ..... 18 thesis credits, 26 total credits

- 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 F400-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.

## NATURAL RESOURCES MANAGEMENT

School of Natural Resources and Extension  
 907-474-7083  
[www.uaf.edu/snre/](http://www.uaf.edu/snre/)

### M.S., M.N.R.M. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits;  
 M.N.R.M.: 35 credits

The two master’s degrees offered by the School of Natural Resources and Extension 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 SNRE, and how such a degree would fit into your career goals. Applications cannot be considered until all these items have been received by the Office of Admissions and the Registrar.

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 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 SNRE.

### M.S. Degree

- 1. Complete the general university requirements (page 199).
- 2. Complete the master’s degree requirements (page 203).

### M.N.R.M. Degree

- 1. Complete the general university requirements (page 199).
  - 2. Complete the master’s degree requirements (page 203).
  - 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 SNRE dean). Up to 9 of these credits may be F400-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.

## OCEANOGRAPHY

School of Fisheries and Ocean Sciences  
 Graduate Program in Marine Sciences and Limnology  
 907-474-7289  
[www.sfos.uaf.edu/academics/](http://www.sfos.uaf.edu/academics/)

### 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 Kodiak Seafood and Marine Science Center. 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.

### 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 199).
3. Complete the master's degree requirements (page 203).
4. Complete one of the following concentrations:
 

**Biological, Chemical, Geological, Physical\***

  - a. Complete the following:
 

MSL F620—Physical Oceanography.....	4
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.....	4
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

### Ph.D. Degree

1. Complete the following admission requirement:
  - a. Submit GRE scores.
2. Complete the general university requirements (page 199).
3. Complete the Ph.D. degree requirements (page 204).
4. Complete course work equivalent to M.S. degree.\*
5. Minimum credits required\*\*.....18
 

\* Students must earn a B- grade or better in the core courses of the degree program before being eligible to take the comprehensive exam

\*\* 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  
<http://cem.uaf.edu/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.

### 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 199).
3. Complete the master's degree requirements (page 203).
4. Complete the thesis or non-thesis requirements:

#### Thesis

- a. Complete four of the following:
 

PETE F607—Advanced Production Engineering.....	3
PETE F608—Flow Assurance in the Petroleum Industry.....	3
PETE F610—Advanced Reservoir Engineering.....	3
PETE F621—Applied Reservoir Characterization.....	3
PETE F630—Water Flooding.....	3
PETE F645—Petroleum Geology.....	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 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—Non-thesis Research/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/](http://www.uaf.edu/physics/)

### M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30-33 credits;  
Ph.D.: 18 thesis credits

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 space physics, infrasonics, complex dynamics of nonlinear systems, ice physics and condensed matter physics.

The M.S. degree with computational physics concentration provides expertise in advanced computing environments, in the relevant mathematical foundations and in the specific physics discipline. It 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 computational modeling and simulation of physical systems.

The M.S. degree with space physics concentration 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.

### M.S. Degree

1. Complete the general university requirements (page 199).
2. Complete the master's degree requirements (page 203).
3. 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
4. Complete the thesis or non-thesis requirements:

#### Thesis

- a. Complete the following:  
PHYS F699—Thesis ..... 6-12
- b. Complete 12 credits from the following:  
Approved PHYS F600-level courses  
Approved ATM F600-level courses
- c. Minimum credits required\* ..... 30  
\* *At least 24 credits must be regular course work.*

#### Non-Thesis

- a. Complete the following:  
PHYS F698—Non-thesis Research/Project ..... 3-6  
Approved courses ..... 18
5. Minimum credits required\* ..... 33  
\* *At least 30 credits must be regular course work.*

### Computational Physics Concentration

1. Complete the general university requirements (page 199).
2. Complete the master's degree requirements (page 203).
3. 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
4. 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
5. Complete the thesis or non-thesis requirements:  
**Thesis**
  - a. Complete the following:  
PHYS F699—Thesis ..... 6-12
  - b. Complete approved PHYS F600-level courses ..... 6
  - c. Minimum credits required ..... 30**Non-Thesis**
  - a. Complete the following:  
PHYS F698—Non-thesis Research/Project ..... 3-6  
Approved PHYS F600-level courses ..... 9
  - b. Minimum credits required\* ..... 33  
\* *At least 30 credits must be regular course work.*

### Space Physics Concentration

1. Complete the general university requirements (page 199).
2. Complete the master's degree requirements (page 203).
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
  - b. Complete approved PHYS F600-level courses ..... 12
  - c. Minimum credits required ..... 30**Non-Thesis**
  - a. Complete the following:  
PHYS F698—Non-thesis Research/Project ..... 3-6  
Approved PHYS F600-level courses ..... 18
  - b. Minimum credits required\* ..... 33  
\* *At least 30 credits must be regular course work.*

### Ph.D. Degree

1. Complete the general university requirements (page 199).
2. Complete the Ph.D. degree requirements (page 204).\*
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.*

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## PHYSICS, SPACE

College of Natural Science and Mathematics  
Department of Physics  
907-474-7339  
[www.uaf.edu/physics/](http://www.uaf.edu/physics/)

### Ph.D. Degree

Minimum Requirements for Degree: 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 — Ph.D. Degree

1. Complete the general university requirements (page 199).
2. Complete the Ph.D. degree requirements (page 204).\*
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.

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## PSYCHOLOGY, CLINICAL-COMMUNITY

College of Liberal Arts  
Department of Psychology  
907-474-7012  
[uaf-psyphd@alaska.edu](mailto:uaf-psyphd@alaska.edu)  
<http://psyphd.alaska.edu>

### Ph.D. Degree

Minimum Requirements for Degree: 115 credits

The Ph.D. program in clinical-community psychology is accredited by the American Psychological Association as a clinical psychology program.

The Ph.D. program in clinical-community psychology with a rural, indigenous emphasis is a program jointly delivered and administered by the Departments of Psychology at the University of Alaska Fairbanks and the University of Alaska Anchorage. The degree is awarded jointly by UAF and 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 equivalent regardless of the students' city of residence (Fairbanks or Anchorage). The program focus includes clinical, community and cultural psychology with a focus on rural, indigenous issues, and an applied emphasis on the integration of research and practice. 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.

The clinical-community psychology program objectives are:

1. *To prepare culturally competent scientists.*  
Program graduates will demonstrate culturally grounded knowledge and skills in scientific inquiry. Graduates will also demonstrate competency in using research and evaluation skills to disseminate new knowledge and inform clinical and community practice.

2. *To prepare culturally competent practitioners.*  
Program graduates will demonstrate culturally grounded knowledge and skills in rural clinical-community practice. Graduates will demonstrate competence in developing and implementing culturally relevant prevention and intervention efforts and programs.
3. *To prepare culturally competent policy and social change facilitators.*  
Graduates will demonstrate culturally grounded knowledge and skills relevant to social and healthcare solutions and possess the competency to facilitate policy and social change.

### Ph.D. Degree

#### Applying for Admission

Students apply to the joint Ph.D. program at both UAF and UAA. All applicants submit identical application materials to both institutions; materials are collected and evaluated by the joint UAF-UAA Ph.D. admissions committee which makes admissions recommendations to the dean of the UAF or UAA Graduate School, depending on a selected applicant's campus of residence. 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.

#### Admission Requirements

1. Application deadline: Received by Feb. 1 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 and UAA catalogs.
3. Minimum of a bachelor's degree (B.S. or B.A. or BEd); 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 UAF/UAA is sought 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). Reference rating forms are at <http://psyphd.alaska.edu/admissions.htm>.
10. A disclosure statement, located at <http://psyphd.alaska.edu/forms/annualdisclosure.pdf>, 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. Additional information on the FBI criminal background check is located at <http://psyphd.alaska.edu/admissions.htm>.

#### Graduation Requirements

1. Complete the general university requirements (page 199).
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.

1. **Cultural experience:** During their first year in the Ph.D. program, students must participate in a cultural experience as defined by program faculty. The actual experience varies from year to year, but includes direct exposure to Alaska Native and other cultural world views, values and life experiences through contact with cultural elders and advisors. The goal of the cultural experience is to provide an opportunity to interact directly with cultures in a non-classroom setting.
2. Complete the following required courses:
 

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.....	6
PSY F653—Practicum Placement — Clinical II .....	6
PSY F657—Quantitative Analysis.....	3
PSY F658—Qualitative Analysis.....	3
PSY F672—Practicum Placement — Community I.....	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
3. Minimum credits required: ..... 115

## Additional Requirements

1. **Clinical Competency:** Clinical competency is demonstrated through preparation of a clinical portfolio that will be evaluated by an ad hoc committee. Criteria for the portfolio will be clearly defined and samples will be provided for students. Students must demonstrate clinical competency before applying to advance to the predoctoral internship and must pass both the clinical competency and community competency before starting the predoctoral internship.
2. **Community competency:** Community competency is demonstrated through preparation of a community portfolio that will be evaluated by an ad hoc committee. Criteria for the portfolio will be clearly defined and samples will be provided for students. Students must pass both the clinical competency and the community competency before actually starting a predoctoral internship.
3. **Research Competency:** Research competency is demonstrated through preparation of a research portfolio that will be evaluated by an ad hoc committee. Criteria for the portfolio will be clearly defined and samples will be provided for students.

4. **Advancement to Candidacy:** Before students are allowed to register for dissertation credits, they will be reviewed for performance by the joint UAF/UAA 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 paper-work and student's progress through the program. Feedback from the review will be provided to the student by her or his advisor. The program defines the comprehensive exam as being met through passing the required competency portfolios. All portfolios must be passed for the comprehensive exam to be fully passed. Passing one portfolio qualifies the student for a conditional pass on the comprehensive exam, which is sufficient for the advancement to candidacy.
5. **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 UAF or UAA Institutional Review Board before data collection can commence.
6. **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.
7. **Advancement to Internship:** Students must pass the clinical portfolio before applying to advance to predoctoral internship. In addition to passing the clinical portfolio, students must apply with a formal memorandum to the local program director by Sept. 30 (the fall semester prior to the year during which the student seeks to complete the internship), stating his or her intent to advance to internship. For most students this will mean that the application needs to be made in the fall of the third year in the program. The program director will notify the core faculty committee, who will review the students' course work, assure that adequate progress has been made toward all prior milestones (i.e., clinical competency, community competency, research competency, doctoral dissertation outline [the outline must be completed, submitted and approved by the chair] and advancement to candidacy) before approving the student for internship and before writing a letter of support for the student. Students must fully pass the clinical portfolio before starting the internship. Failure to pass the clinical portfolio or the community portfolio will result in the student not being eligible to enroll in internship credits.
8. **Predocctoral Internship (PSY F686):** 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.
9. **APA Ethical Guidelines:** 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 Alaska Campus 907-474-5439  
Kuskokwim Campus 907-543-4500  
Northwest Campus 907-443-2201  
[www.uaf.edu/danrd/ma-program/](http://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/](http://www.uaf.edu/danrd/ma-program/).

### M.A. Degree

1. Complete the general university requirements (page 199).
2. Complete the master's degree requirements (page 203).
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  
907-474-7694  
<http://cem.uaf.edu/cee/>

### M.S. Degree

**This program is presently suspended.**

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.

### 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 199).
  3. Complete the master's degree requirements (page 203).
  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  
MBA 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)  
MBA 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
- 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.

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## SCIENCE TEACHING AND OUTREACH

College of Natural Science and Mathematics  
Department of Biology and Wildlife  
907-474-7671  
[www.bw.uaf.edu](http://www.bw.uaf.edu)

### Graduate Certificate

Minimum Requirements for Certificate: 12 credits

The certificate in science teaching and outreach is a voluntary program that prepares science graduate students for science careers that include teaching and/or communicating science to the public. It does NOT meet the requirements for earning a state teaching certificate and will not allow graduates to apply for certified positions in the K-12 school system. The science teaching and outreach certificate will enhance readiness for college-level teaching by providing hands-on training and familiarity with pedagogical theory. The certificate is expected to increase competitive ability in the higher-education job market.

### Graduate Certificate

1. Complete the general university requirements (page 199).
2. Have a bachelor's degree from an accredited institution.
3. Admission to a graduate science or engineering degree program at UAF (CNSM, SFOS, SNRE, CEM), or prior completion of a graduate degree in the sciences or engineering.
4. Complete the following:  
STO F601—Communicating Science .....2  
STO F502—Mentoring in the Sciences .....2  
STO F603—Instructional Design .....1  
STO F604—Science Teaching and Outreach Internship .....4  
STO F666—Scientific Teaching.....2
5. Complete one of the following:  
MATH F600—Mathematics Teaching Seminar .....1  
PHYS F605—Physics Teaching Seminar.....1  
STO F692—Current Topics in Scientific Teaching.....1
6. Minimum credits required .....12

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## SPECIAL EDUCATION

School of Education  
907-474-7341  
[www.uaf.edu/educ/](http://www.uaf.edu/educ/)

Students may earn a graduate-level, postbaccalaureate certificate and Master of Education degree in special education. See Education, page 216, for information.

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## STATISTICS

College of Natural Science and Mathematics  
Department of Mathematics and Statistics  
907-474-7332  
[www.uaf.edu/dms/](http://www.uaf.edu/dms/)

### 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 postbaccalaureate 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 Certificate

1. Complete the following admission requirements:
    - a. Hold a baccalaureate degree from an accredited institution
    - b. Complete MATH F251X, MATH F252X and MATH F253X or equivalent\*
    - c. Complete STAT F401 or equivalent\*
  2. Complete the general university requirements (page 199).
  3. Complete the graduate certificate requirements (page 203).
  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
  6. Complete one or more from the following electives to total 12 credits for the certificate:  
STAT F641—Bayesian Statistics .....3  
PHYS F628—Digital Time Series Analysis.....3  
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
  7. Minimum credits required .....12
- \* Student must earn a C grade or better in each course.

## M.S. Degree

- Complete the following admission requirements:
    - Submit three letters of recommendation concerning the applicant's educational background and quantitative training.
    - Submit complete transcripts for all college-level work.
    - Submit a resume.
    - Submit a written statement of goals.
    - Submit GRE scores.
    - The applicant must have completed a bachelor's degree from an accredited institution with a GPA of at least 3.0.
    - Must have completed the following courses or their equivalent with a B grade or better: full calculus sequence (MATH F251X, F252X, F253X); or students completing MATH F222X or F232X must take MATH F252X and F253X 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.
  - Complete the general university requirements (page 199).
  - Complete the master's degree requirements (page 203).
  - 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— Non-thesis Research/Project.....	3
  - 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
  - Complete at least 6 credits of approved courses from an application area or courses with substantial statistical and/or mathematical content.\*
  - 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](http://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.

### M.S. Degree

- Complete the following admission requirement:
  - Submit scores from both the GRE general test (required) and the GRE subject test in biology (highly recommended).
  - If English is not your native language, submit scores from both the Test of Spoken English and the Test of Written English, as well as TOEFL scores. Requests, including justification, for exceptions to this requirement should be made to the chair of the department.
- Complete the general university requirements (page 199).
- Complete the M.S. — with Thesis degree requirements (page 205).
- Complete two courses in BIOL or WLF at the graduate level including one of the following:

BIOL/WLF F602—Research Design (3)	
BIOL/WLF F604—Scientific Writing (3)	
BIOL/WLF F680—Data Analysis in Biology (3).....	6-7
- As part of the M.S. degree requirements, complete and pass the departmental written and oral master's comprehensive examination.
- Minimum credits required .....30  
See Biological Sciences.



UAF photo by JR Ancheta.

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Students converse in Spanish during the MAYmester class Si Si!  
Summer Intensive Spanish Immersion at the Language Lab.

# 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 Alaska 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 F113X), 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.

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 (one hour per week) of lecture, or 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 [two hours per week] minutes of study and preparation outside of class in order to meet the learning objectives for the unit of credit in lecture.)

Laboratory classes require a minimum of 2,400 lab minutes per credit (three hours per week per credit), or a minimum of 1,600 lab minutes (two hours per week per credit) plus 800 minutes (one hour per week) of study and/or preparation outside of class. A course submission with a lab component must include a justification (in terms of required student work minutes outside of lab) if the laboratory does not require at least 2,400 lab minutes per credit.

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) + 800 or 0 minutes of outside student work.
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 existing semester-long course that is to be offered in a format that is compressed to less than six weeks must be approved by the college or school's curriculum council and the appropriate Faculty Senate committee. Any new course proposal must indicate those course compression format(s) in which the course will be taught. Only approved course formats will be allowed for scheduling.

Following the title of each course, the number of credits is listed for each semester. Thus "3 credits" means 3 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, respectively, the class meets each week for one semester. 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 of lecture each week and six hours 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

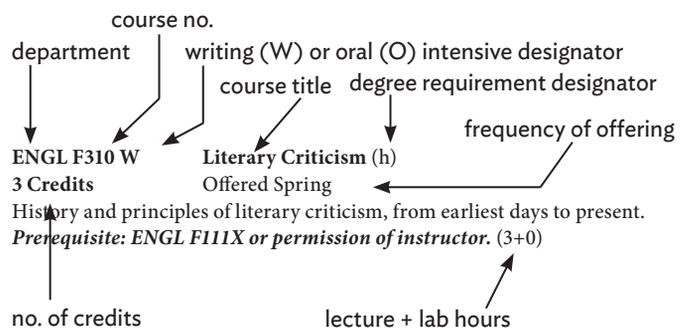
**\***—content is relevant to northern, Arctic or circumpolar studies

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



## 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 of Management courses (AIS, ACCT, BA, ECON, HSEM, LEAD and MBA) except ECON F100X. This fee is in addition to any materials fees.

### ACCT F261 Principles of Financial Accounting (s) 3 Credits

An understanding of basic financial statements from a user perspective (investors, managers and creditors) is strongly emphasized. 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. Emphasizes the recognition and recording of financial information, the creation and understanding of financial statements, and the role accounting information takes in business and society. *Prerequisites: Sophomore standing or higher; placement, concurrent enrollment or completion of MATH at the F100-level or above.* (3+0)

### ACCT F262 Principles of Managerial Accounting 3 Credits

Study of the generation and analysis of accounting information and its uses by managers as they engage in planning, control and decision-making activities in business and non-business organizations. Topics include product costing, cost-volume-profit analysis, relevant costs for decision-making and capital budget decisions. *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, may be taken concurrently.* (1+0)

### ACCT F271 Fiscal Management for Emergency Management Operations 3 Credits Offered Fall

This course is about accounting for public organizations such as fire, police and similar functions of local governments. Accounting is an essential function in all organizations. This course is from a user's perspective — understanding accounting reports rather than preparing them. The major topics covered include: understanding financial reports, budgeting preparation, governmental accounting basics, grant writing and management and ethics. *Prerequisites: Sophomore standing or higher; placement, concurrent enrollment or completion of MATH at the F100-level or above.* Cross-listed with HSEM F271. (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. Special fees apply. *Prerequisites: ACCT F361.* (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. Special fees apply. *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. Special fees apply. *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. Special fees apply. *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. Special fees apply. *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. Special fees apply. *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. Special fees apply. *Prerequisites: ACCT F362.* (3+0)

### ACCT F404 Advanced Cost Accounting and Controllershship 3 Credits Offered Fall or Spring

Study of the controllership function with emphasis on advanced cost and managerial accounting topics related to contemporary organizations. Special fees apply. *Prerequisites: ACCT F342.* (3+0)

### ACCT F414 O/2 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. Special fees apply. *Prerequisites: ENGL F111X; ENGL F211X or F213X; COMM F131X or F141X; ACCT F362; ACCT F452 or ACCT F472.* (3+0)

### ACCT F430 Advanced Taxes 3 Credits Offered Fall or Spring

Advanced study of income taxation, emphasizing federal taxation of corporations and partnerships. Special fees apply. *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. Special fees apply. *Prerequisites: ACCT F362; AIS F316; ENGL F111X; ENGL F211X or ENGL F213X.* (3+0)

### ACCT F472 W Internal and Government Auditing 3 Credits Offered Fall or Spring

Internal auditing including financial, compliance and performance audits. An overview of auditing concepts and practice is discussed with specific

## ACCOUNTING (ACCT) — AIRFRAME AND POWERPLANT (AFPM)

application to internal auditing and governmental auditing, including federal and state single audits. For auditor practitioners and students without field experience in auditing. Special fees apply. *Prerequisites:* ENGL F111X; ENGL F211X or F213X; ACCT F362; or instructor permission. (3+0)

### 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.) Special fees apply. *Prerequisites:* M.B.A standing or approval of M.B.A 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 of Management courses (AIS, ACCT, BA, ECON, HSEM, LEAD, and MBA) 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. Special fees apply. *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. Special fees apply. *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. Special fees apply. *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. Special fees apply. *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 modeling with study of management and administrative problems in coordination and management of organization data resources; focusing on needs of medium-sized and large organizations. Special fees apply. *Prerequisites:* AIS F310 or CS F401. (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 A & P 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)

<b>AFPM F151</b> <b>1 Credit</b>	<b>Cleaning and Corrosion Control</b> Offered As Demand Warrants	<b>AFPM F235</b> <b>4.5 Credits</b>	<b>Aircraft Reciprocating Engines</b> Offered As Demand Warrants
Basic aircraft cleaning materials, methods and corrosion control. Special fees apply. <i>Prerequisites: Admission to A &amp; P Program; or permission of instructor.</i> (1+0)		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. <i>Prerequisites: Admission to A &amp; P Program; or permission of instructor.</i> (4.5+0)	
<b>AFPM F152</b> <b>1 Credit</b>	<b>Federal Aviation Regulations</b> Offered As Demand Warrants	<b>AFPM F240</b> <b>2 Credits</b>	<b>Turbine Engines</b> 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. <i>Prerequisites: Admission to A &amp; P Program; or permission of instructor.</i> (1+0)		Development, theory and operation of turbine engines. Engine design, performance, accessories and subsystems. Engine maintenance and overhaul. Special fees apply. <i>Prerequisites: Admission to A &amp; P Program; or permission of instructor.</i> (2+0)	
<b>AFPM F153</b> <b>1 Credit</b>	<b>Weight and Balance</b> Offered As Demand Warrants	<b>AFPM F244</b> <b>1.5 Credits</b>	<b>Lubricating Systems</b> Offered As Demand Warrants
Weighing procedures, weight, arms, moments, center of gravity computations and placarding. Aircraft loading, required forms, weighing. Special fees apply. <i>Prerequisites: Admission to A &amp; P Program; or permission of instructor.</i> (1+0)		Identification and selection of lubricants for aircraft powerplants. Inspection, service, troubleshooting and repair of the lubrication systems and components. Special fees apply. <i>Prerequisites: Admission to A &amp; P Program; or permission of instructor.</i> (1.5+0)	
<b>AFPM F154</b> <b>0.5 Credit</b>	<b>Ground Operations and Servicing</b> Offered As Demand Warrants	<b>AFPM F245</b> <b>2 Credits</b>	<b>Ignition Systems</b> Offered As Demand Warrants
Starting, moving, servicing, securing and fueling aircraft. Special fees apply. <i>Prerequisites: Admission to A &amp; P Program; or permission of instructor.</i> (0.5+0)		Overhaul, inspection and troubleshooting of reciprocating and gas turbine ignition systems. Repair and bench testing of components. Special fees apply. <i>Prerequisites: Admission to A &amp; P Program; or permission of instructor.</i> (2+0)	
<b>AFPM F205</b> <b>3 Credits</b>	<b>Airframe Structures</b> Offered As Demand Warrants	<b>AFPM F246</b> <b>2 Credits</b>	<b>Fuel Metering Systems</b> 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. <i>Prerequisites: Experience requirements of FAR 65.77; or permission of instructor.</i> (3+0)		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. <i>Prerequisites: Admission to the A &amp; P Program; or permission of instructor.</i> (2+0)	
<b>AFPM F206</b> <b>2 Credits</b>	<b>Airframe System and Components</b> Offered As Demand Warrants	<b>AFPM F248</b> <b>0.5 Credit</b>	<b>Induction Systems</b>
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. <i>Prerequisites: Experience requirements of FAR 65.77; or permission of instructor.</i> (2+0)		Operation and service of aircraft induction, preheat, anti-ice and super-charger systems. Special fees apply. (0.5+0)	
<b>AFPM F215</b> <b>2 Credits</b>	<b>MOS Powerplant Theory/Maintenance</b> Offered As Demand Warrants	<b>AFPM F249</b> <b>0.5 Credit</b>	<b>Powerplant Cooling Systems</b>
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. <i>Prerequisites: Experience requirements of FAR 65.77; or permission of instructor.</i> (2+0)		Inspection, service and repair of engine cooling systems — both air and liquid cooled installations. Special fees apply. <i>Prerequisites: Admission to A &amp; P Program; or permission of instructor.</i> (0.5+0)	
<b>AFPM F216</b> <b>3 Credits</b>	<b>MOS Powerplant System/Components</b> Offered As Demand Warrants	<b>AFPM F250</b> <b>0.5 Credit</b>	<b>Powerplant Exhaust Systems</b>
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. <i>Prerequisites: Experience requirements of FAR 65.77; or permission of instructor.</i> (3+0)		Inspection, service and repair of engine exhaust systems. Includes operations of turbo compounded engines, thrust reversers and noise suppressors. Special fees apply. <i>Prerequisites: Admission to A &amp; P Program; or permission of instructor.</i> (0.5+0)	
<b>AFPM F230</b> <b>2.5 Credits</b>	<b>Aircraft Electrical Systems</b> Offered As Demand Warrants	<b>AFPM F251</b> <b>1.5 Credits</b>	<b>Fuel Systems</b> 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. <i>Prerequisites: Admission to A &amp; P Program; or permission of instructor.</i> (2.5+0)		Inspection, servicing, troubleshooting and repair of aircraft and engine fuel systems and components. Special fees apply. <i>Prerequisites: Admission to A &amp; P Program; or permission of instructor.</i> (1.5+0)	
<b>AFPM F231</b> <b>1.5 Credits</b>	<b>Powerplant Electrical Systems</b> Offered As Demand Warrants	<b>AFPM F252</b> <b>2 Credits</b>	<b>Propellers</b> 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)		Identification and nomenclature of aircraft propellers. Operation, control and repair of both reciprocating and turbine engine installations. Special fees apply. <i>Prerequisites: Admission to A &amp; P Program; or permission of instructor.</i> (2+0)	
		<b>AFPM F253</b> <b>1 Credit</b>	<b>Transport Category Aircraft</b> Offered As Demand Warrants
		Introduction to transport category aircraft systems and components. Special fees apply. <i>Prerequisites: Admission to A &amp; P Program; or permission of instructor.</i> (1+0)	

## AIRFRAME AND POWERPLANT (AFPM) — ALASKA NATIVE LANGUAGES (ANL)

**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 permis-*  
*sion of instructor.* (1.5+0)

**AFPM F261**      **Nonmetallic 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 cover-  
ings 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; 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 regu-  
latory 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 airwor-  
thiness 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 Lan-  
guage or other non-English language taken at the university level  
may replace 6 credits in the Perspectives on the Human Condi-  
tion 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)

**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)

<p><b>ANL F122</b> 1-3 Credits</p> <p>Introduction to speaking and understanding one of the Alaska Native languages. Focus on communication in everyday situations. Note: Does not satisfy core curriculum requirements. <i>Prerequisites: ANL F121 in the same language; or permission of instructor.</i> (1-3+0)</p> <p><b>ANL F141</b> 5 Credits</p> <p>Introduction to an Alaska Athabaskan language. Class will deal with one of the eleven Athabaskan 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)</p> <p><b>ANL F142</b> 5 Credits</p> <p>Introduction to an Alaska Athabaskan language. Class will deal with one of the eleven Athabaskan languages spoken in Alaska. Literacy and grammatical analysis for speakers. For non-speakers, a framework for learning to speak, read and write the language. <i>Prerequisites: ANL F141 in the same language; or permission of instructor.</i> (5+0)</p> <p><b>ANL F150</b> 1 Credit</p> <p>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)</p> <p><b>ANL F151</b> 3 Credits</p> <p>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)</p> <p><b>ANL F199</b> 3 Credits</p> <p>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)</p> <p><b>ANL F208</b> 1-3 Credits</p> <p>Expository and creative writing for native speakers; reading Athabaskan literature; elicitation, transcription and editing of cultural materials from elders. (1-3+0)</p> <p><b>ANL F221</b> 1-3 Credits</p> <p>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. <i>Prerequisites: ANL F121; ANL F122; or permission of instructor.</i> (1-3+0)</p> <p><b>ANL F241</b> 3 Credits</p> <p>Continuation of beginning Athabaskan-Koyukon or Gwich'in. One of these two languages will be taught. Development of conversational ability, additional grammar and vocabulary. <i>Prerequisites: ANL F141 and ANL F142 in the same language; or permission of instructor.</i> (3+0)</p> <p><b>ANL F242</b> 3 Credits</p> <p>Continuation of beginning Athabaskan-Koyukon or Gwich'in. One of these two languages will be taught. Development of conversational ability,</p>	<p><b>Conversational Alaska Native Language (h)✳</b> Offered Spring</p> <p><b>Beginning Athabaskan-Koyukon or Gwich'in (h)✳</b> Offered Fall</p> <p><b>Beginning Athabaskan (h)✳</b> Offered Spring</p> <p><b>Interpretive Communication (s)✳</b> Offered As Demand Warrants</p> <p><b>Interethnic Communications (s)✳</b> Offered As Demand Warrants</p> <p><b>Practicum in Native Language Education ✳</b> Offered As Demand Warrants</p> <p><b>Advanced Athabaskan Literacy (h)✳</b> Offered As Demand Warrants</p> <p><b>Intermediate Conversational Alaska Native Language (h)✳</b> Offered As Demand Warrants</p> <p><b>Intermediate Athabaskan-Koyukon or Gwich'in (h)✳</b> Offered Fall</p> <p><b>Intermediate Athabaskan-Koyukon or Gwich'in ✳</b> Offered Spring</p>	<p>additional grammar and vocabulary. <i>Prerequisites: ANL F141 and ANL F142 in the same language; or permission of instructor.</i> (3+0)</p> <p><b>Introduction to Athabaskan Linguistics (h)✳</b> 3 Credits Offered Summer, As Demand Warrants</p> <p>An introduction to the linguistic structure of the Athabaskan family of languages, drawing on examples from the Athabaskan 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)</p> <p><b>Introduction to Alaska Native Languages: Eskimo-Aleut ✳</b> 3 Credits Offered As Demand Warrants</p> <p>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)</p> <p><b>Introduction to Alaska Native Languages: History, Status and Maintenance ✳</b> 3 Credits Offered Spring Even-numbered Years</p> <p>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)</p> <p><b>Teaching Methods for Alaska Native Languages (h)✳</b> 3 Credits Offered As Demand Warrants</p> <p>Methodological approaches and practice in teaching Native language and literacy to both speakers and non-speakers. <i>Prerequisites: Knowledge of a Native language.</i> (3+0)</p> <p><b>Curriculum and Materials Development for Alaska Native Languages (h)✳</b> 3 Credits Offered As Demand Warrants</p> <p>Preparation and evaluation of curriculum and classroom materials for teaching Native languages. <i>Prerequisites: ANL F287; Knowledge of a Native language; or permission of instructor.</i> (3+0)</p> <p><b>Practicum in Native Language Education II ✳</b> 3 or 4 Credits Offered As Demand Warrants</p> <p>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. <i>Prerequisites: ANL F199; ANL F287; ANL F288.</i> (3 or 4+0+10)</p> <p><b>Alaska Native Languages: Eskimo-Aleut (h)✳</b> 3 Credits Offered As Demand Warrants</p> <p>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)</p> <p><b>Alaska Native Languages: Indian Languages (h)✳</b> 3 Credits Offered As Demand Warrants</p> <p>A survey of all Native languages of Alaska; particularly of the Indian languages: Athabaskan-Eyak-Tlingit, Haida and Tsimshian. History, present and future; examples of language structure, present situation and prospects as a cultural force. Open to all students. (3+0)</p> <p><b>Alaska Native Language Apprenticeship (h)✳</b> 5 Credits Offered As Demand Warrants</p> <p>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. <i>Prerequisites: One year university-level study in language of internship; or permission of instructor.</i> (0.5+10+10)</p>
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## ALASKA NATIVE LANGUAGES (ANL) — ALASKA NATIVE STUDIES (ANS)

**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 permission of instructor**. Cross-listed with CCS F608; ED F608; RD F608. (3+0)

**ANL F651**      **Topics in Athabascan Linguistics**  
**3 Credits**      Offered Fall Odd-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 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)

**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. 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. *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 in Alaska (s)✳**  
**3 Credits**      Offered Alternate Spring  
 Course surveys relationships between language, culture and society with a special focus on the languages and cultures of Alaska. We review the study of linguistic anthropology, consider cultural variation in the socialization to language, multilingualism, language change, language shift, cultural variation in conversational practices, and relationships between language and identity (gender, ethnicity, nationalism). *Prerequisites: LING F101; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.* Cross-listed with ANTH F320. (3+0)
- ANS F325**      **Native Self Government (s)✳**  
**3 Credits**      Offered Spring Odd-numbered Years  
 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 or PS F263 or TM F201; 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)
- 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, Athabaskan, 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)

## ALASKA NATIVE STUDIES (ANS)

- 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 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 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 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 through eLearning & Distance Education. *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 Summer  
 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; junior standing; or permission of instructor.* Cross-listed with ED F420. Stacked with ED F606 (3+0)
- ANS F425**      **Federal Indian Law and Alaska Natives (s)☼**  
**3 Credits**      Offered Fall  
 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 or TM F112 or TM F201 or 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 promoting or limiting self-determination. *Prerequisites: Upper-division standing; or permission of instructor.* Cross-listed with PS F450. (3+0)
- ANS F458**      **The Politics of Indigenous Identity ☼**  
**3 Credits**      Offered As Demand Warrants  
 Examines indigenous identity from four different perspectives: legal, biological, cultural and self-identity. The course will be a journey of self-discovery for students as they research their discovery for students as they research their personal identities whether they be indigenous identities or other identities. *Prerequisites: Upper-division standing; or permission of the instructor.* (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)
- ANS F478 W**      **Alaska Native Studies Senior Thesis**  
**3 Credits**      Offered Spring  
 This is a capstone course that allows students to draw together the concepts, ideas, vocabulary, case studies and situations learned in Alaska Native studies courses to apply them to expand or extend students' knowledge or to develop a tangible product that benefits others. This course enables students to develop a research paper exploring a specific Native studies topic of their choice, building on concepts learned in the ANS program. *Prerequisites: Senior standing; ENGL F211X or ENGL F213X; RD F350; ANS F350.* (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)

**ASLG F220 Deaf Culture**  
**3 Credits** Offered as Demand Warrants  
 This course explores the Deaf-World through the various lens provided by the multidisciplinary fields of Anthropology, Sociology, History and Cultural Studies. Students will be asked to inquire into the diversity, complexities and commonalities of Deaf cultural experiences through rigorous questioning of fundamental issues pertaining to cultural practices, ideology, power, identity and heritage. *Prerequisites: ENGL F111x, ASLG F202 or permission of instructor.* (3+0)

**ASLG F230 Deaf History**  
**3 Credits** Offered As Demand Warrants  
 A focus on Deaf history in America from 1800 to 1950, this course addresses the emergence, growth and survival of America's Deaf community. Through major topics such as schools, labor, community ties, eugenics and organizations, students will learn the significance of the "Deaf" place as well as parallels with other minority groups and associated trends. *Prerequisites: ENGL F111X; ASLG F202; 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 eLearning & Distance Education. (3+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 Fundamentals of 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 F223 Sociolinguistics: Language and Social Inequality**  
**3 Credits** Offered Spring  
 This course is an introduction to the concepts and methods of linguistic anthropology and sociolinguistics. It draws from these disciplines in order to investigate the role of language variation in social inequality. It covers concepts including language varieties, speech styles, language ideologies, the creation of standard languages and portrayals of ethnolinguistic groups in the media. *Prerequisites: ANTH F100X or LING F101.* Cross-listed with LING F223. (3+0)

**ANTH F225 Anthropology and Race (s)**  
**3 Credits** Offered Spring Even-numbered Years  
 This course introduces students to important scholarly and practical concepts in the study of "race" and racism historically across cultures. It builds upon the important contributions of four-field anthropological practice to our understanding of the ways societies have constructed racial categories and meanings and deployed racialized hierarchies. Students will read a variety of basic materials in linguistics, biological anthropology, ethnology, and archaeology. This course is part of the anthropology B.S. and B.A. degree and provides foundational concepts for further study in the field of anthropology. *Prerequisites: ANTH F100X.* (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)

## ANTHROPOLOGY (ANTH)

### ANTH F242 Native Cultures of Alaska (s)☼ 3 Credits

The traditional Aleut, Eskimo and Indian (Athabaskan and Tlingit) cultures of Alaska. Eskimo and Indian cultures in Canada. Linguistic and cultural groupings, population changes, subsistence patterns, social organization and religion in terms of local ecology. Pre-contact interaction between groups. Cross-listed with ANS F242. (3+0)

### ANTH F245 Culture and Global Issues (s) 3 Credits

Offers 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

Offers 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 Siberia: Past, Present, Future (s)☼ 3 Credits

Spring Even-numbered Years  
Survey of anthropological research on peoples and cultures of Siberia, including the Russian Far East. This includes sections on prehistory and colonial history of the region, as well as a major focus on contemporary lives and future prospects. While the emphasis is on the indigenous peoples of Siberia, settler populations will be discussed as well. *Prerequisites:* ANTH F100X or permission of instructor. (3+0)

### ANTH F308 W,O Language and Gender (s) 3 Credits

Offers 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

Offers 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 F314 W The Archaeology of the Cavemen (s) 3 Credits

Offers Spring Odd-numbered Years  
Explores the archaeology of the "classic" cavemen—the Neanderthals—and their contemporaries in Africa. Begins with an exploration of how cavemen have been portrayed in popular culture/the arts, but focuses primarily on what the archaeological record can tell us about the behavior and culture of these important human ancestors. *Prerequisites:* ANTH F100X or ANTH F101; ENGL F111X; ENGL F211X or ENGL F213X. (3+0)

### ANTH F315 Human Variation (n) 3 Credits

Offers 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 paleoanthology. *Prerequisites:* ANTH F221 or BIOL F103X. (2+3)

### ANTH F317 Human Growth and Development 3 Credits

Offers 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 in Alaska (s)☼ 3 Credits

Offers Alternate Spring  
Course surveys relationships between language, culture, and society with a special focus on the languages and cultures of Alaska. We review the study of linguistic anthropology, consider cultural variation in the socialization to language, multilingualism, language change, language shift, cultural variation in conversational practices and relationships between language and identity (gender, ethnicity, nationalism). *Prerequisites:* ENGL F111X; ENGL F211X or ENGL F213X; LING F101; or permission of instructor. Cross-listed with ANS F320. (3+0)

### ANTH F365 W Native Art of Alaska (h)☼ 3 Credits

Offers 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 F383 Athabaskan Peoples of Alaska and Adjacent Canada (s) 3 Credits

Offers Fall Even-numbered Years  
Contemporary conditions and traditional heritage of the Athabaskan 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

Offers 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 F403 W,O Political Anthropology (s) 3 Credits

Offers 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:* 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

Offers 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

Offers Spring Even-numbered Years  
Forms of relatedness in diverse sociocultural systems. Principles of organizing individuals into social groups and roles. Forms and functions of family, marriage, incest taboo around the world. Classical and new approaches to the study of kinship; alliance theory, symbolic kinship, kinship and gender, the substance of kinship, kinship and biotechnology. *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 circumpolar societies as well as a global phenomenon. Religious practitioners, ritual, belief systems and the relationship of religious phenomena to other aspects of social life. New relational and cognitive approaches to the study of religion. *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 F412 Human-Environment Research Methods**  
**3 Credits** Offered Fall  
 Basic 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: COMM F131X or COMM F141X; ENGL F211X or ENGL F213X; upper level standing; or permission of instructor.* Cross-listed with FISH F412. (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. *ANTH F211 or permission of instructor.* (2+3)

**ANTH F422 Human Osteology**  
**4 Credits**  
 Growth, development and alteration of the human skeleton. Determination of age, sex, stature and genetic ancestry from bones and teeth. Skeletal remains for diagnosis of disease and identification of cultural practices. *Prerequisites: ANTH F221; or permission of instructor.* Stacked with ANTH F625. (3+3)

**ANTH F423 Human Origins**  
**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 Fall 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 Spring Even-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 F435 Political Media and Discourses of the American Right (s)**  
**3 Credits** Offered Fall Even-numbered Years or As Demand Warrants  
 This class uses “hands-on” discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right; the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts. Evaluation of the veracity, ethical or historical merits of conservative political stances is not part of the scope of the class. *Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X.* (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)

## ANTHROPOLOGY (ANTH)

**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)

**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. Special fees apply. *Prerequisites:* Junior, senior or graduate standing or permission of instructor. Cross-listed with ART F460 and FLM F460. (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 Alternate 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 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 of relatedness in diverse sociocultural systems. Principles of organizing individuals into social groups and roles. Forms and functions of family, marriage, incest taboo around the world. Classical and new approaches to the study of kinship; alliance theory, symbolic kinship, kinship and gender, the substance of kinship, kinship and biotechnology. *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 circumpolar societies as well as a global phenomenon. Religious practitioners, ritual, belief systems and the relationship of religious phenomena to other aspects of social life. New relational and cognitive approaches to the study of religion. *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 Paleoeology**  
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/BIOECON/NRM F667; ANTH/BIOECON/NRM F668; or permission of instructor. Cross-listed with BIOL F613; ECON F613; NRM F613. (2+0)

**ANTH F623 Human Origins**  
**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**  
**4 Credits** Offered Fall Odd-numbered Years  
 Growth, development and alteration of the human skeleton. Determination of age, sex, stature and genetic ancestry from bones and teeth. Skeletal remains for diagnosis of disease and identification of cultural practices. *Prerequisites: ANTH F221; graduate standing; or permission of instructor.* Stacked with ANTH F422. (3+3)

**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 F628 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. *Graduate standing or permission of instructor.* (2+3)

**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 Linguistic Anthropology: Language, Thought and Action**  
**3 Credits** Offered As Demand Warrants  
 Language and social life. Course surveys the history of linguistic anthropology and the methods and questions that have driven and distinguished the field. Topics include descriptive and structural linguistics, the relationship between grammatical categories and linguistic meaning, ethnographic

approaches to the study of language and culture, language and social action, linguistic relativity, semiotics, language socialization and language ideologies. *Prerequisites: Graduate standing* (3+0)

**ANTH F632 Field Methods in Descriptive Linguistics**  
**3 Credits** Offered Fall 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 Spring Even-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 F635 Political Media and Discourses of the American Right**  
**3 Credits**  
 The class uses "hands-on" discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right; the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts. Evaluation of the veracity, ethical or historical merits of conservative political stances are not part of the scope of the class. *Prerequisites: Graduate standing.* Cross-listed with LING F635. Stacked with ANTH F435; (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)

## ANTHROPOLOGY (ANTH) — APPLIED ART (APAR)

**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 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. 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 Alternate 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**  
3 Credits Offered Fall Odd-Numbered Years  
Introduction to the field of political ecology. Topics include the sociology of scientific knowledge, traditional and local ecological knowledge, politics of resource management, processes of enclosure and privatization, environmental values, 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 and FISH F680. (0+0+5-16)

## APPLIED ART

**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 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. (1-3+0)

**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)

**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. (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. (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 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 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 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)

**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 F104; 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 leader 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)

## APPLIED BUSINESS (ABUS)

<b>ABUS F183</b> 1-3 Credits 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. <i>Recommended: Job readiness. This class is designed for students embarking into the job market.</i> (1-3+0)	<b>Advanced Job Readiness Skills</b> Offered As Demand Warrants	<b>ABUS F210</b> 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)	<b>Income Tax</b>
<b>ABUS F188</b> 1 Credit Taxable income, deductions, credit, exemptions, and computation. Computer use, record keeping methods, tax forms and new tax laws. (1+0)	<b>Personal Income Tax</b> Offered Fall	<b>ABUS F220</b> 3 Credits Basic microcomputer principles. Includes entering transactions, analyzing results, correcting errors and organizing business finances. QuickBooks is a widely used accounting software application. <i>Prerequisites: ABUS F101 or permission of instructor.</i> (3+0)	<b>Microcomputer Accounting: QuickBooks</b>
<b>ABUS F199</b> 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. <i>Prerequisites: Permission of instructor.</i> (0+0)	<b>Practicum in Applied Business</b>	<b>ABUS F221</b> 3 Credits Computer processing of accounting transactions. Software packages, micro-computer systems and hardware, computer terminology, system analysis and actual computer operations in accounting. <i>Prerequisites: ACCT F261; ABUS F142.</i> (3+0)	<b>Microcomputer Accounting</b>
<b>ABUS F201</b> 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. <i>Recommended: Math placement at F100-level or above.</i> (3+0)	<b>Principles of Accounting II</b>	<b>ABUS F223</b> 3 Credits Deeds and conveyances, mortgages, liens, rentals, appraisals and other transactions in real estate and law. (3+0)	<b>Real Estate Law</b> Offered As Demand Warrants
<b>ABUS F202</b> 3 Credits 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. <i>Prerequisites: ABUS F201 or permission of instructor. Recommended: Math placement at F100-level or above.</i> (3+0)	<b>Principles of Accounting III</b> Offered Spring	<b>ABUS F231</b> 1-3 Credits 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)	<b>Introduction to Personnel</b> Offered As Demand Warrants
<b>ABUS F203</b> 3 Credits 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. <i>Recommended: ABUS F101; ABUS F141; concurrent enrollment or completion of ABUS F201; ABUS F220.</i> (3+0)	<b>Accounting Capstone</b> Offered Fall	<b>ABUS F232</b> 3 Credits Management functions, including planning, organizing, staffing, directing and controlling, human aspects of management, and decision making. <i>Prerequisites: BA F151 or permission of instructor.</i> (3+0)	<b>Contemporary Management Issues</b> Offered Fall
<b>ABUS F207</b> 2 Credits Training in machine transcription with emphasis on mailable copies. Review of language skills and vocabulary included. <i>Prerequisites: CIOS F108 or permission of instructor.</i> (2+0)	<b>Machine Transcription</b> Offered As Demand Warrants	<b>ABUS F233</b> 3 Credits Internal financial controls, fraud, and internal audit. <i>Recommended: BA F151; ABUS F101 or ACCT F261.</i> (3+0)	<b>Financial Management</b> Offered Spring
<b>ABUS F208</b> 2 Credits 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. <i>Prerequisites: ABUS F108; ABUS F207.</i> (2+0)	<b>Medical Machine Transcription</b> Offered As Demand Warrants	<b>ABUS F234</b> 3 Credits 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. <i>Recommended: ABUS F161.</i> (3+0)	<b>Introduction to Investing</b> Offered Fall
<b>ABUS F209</b> 2 Credits 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)	<b>Legal Machine Transcription</b> Offered As Demand Warrants	<b>ABUS F235</b> 3 Credits Accounting for nonprofit organizations, governmental units, health care providers, voluntary health and welfare organizations, public schools, colleges, universities and other organizations using fund accounting. <i>Prerequisites: ABUS F101.</i> (3+0)	<b>Fund Accounting for Nonprofits</b> Offered Fall
		<b>ABUS F241</b> 3 Credits Legal aspects of business problems. Principles, institutions and administration of law in contracts, agency, employment, personal sales and property ownership. <i>Prerequisites: BA F151.</i> (3+0)	<b>Applied Business Law I</b> Offered Fall
		<b>ABUS F242</b> 3 Credits Labor and employment law with emphasis on case analysis. <i>Recommended: BA F151.</i> (3+0)	<b>Employment Law</b> Offered As Demand Warrants

<b>ABUS F256</b>	<b>Small Hotel, Bed and Breakfast, and Lodge Operations</b>
<b>1-3 Credits</b>	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)	
<b>ABUS F260</b>	<b>Marketing Practices</b>
<b>3 Credits</b>	
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)	
<b>ABUS F263</b>	<b>Public Relations</b>
<b>3 Credits</b>	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. <i>Recommended: BA F151.</i> (3+0)	
<b>ABUS F264</b>	<b>Filing/Records Management</b>
<b>3 Credits</b>	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)	
<b>ABUS F265</b>	<b>Seminar in Applied Marketing</b>
<b>3 Credits</b>	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. <i>Prerequisites: ABUS F260 or permission of instructor.</i> (3+0)	
<b>ABUS F267</b>	<b>Transportation and Logistics Management</b>
<b>1-3 Credits</b>	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. <i>Prerequisites: ABUS F158 or permission of instructor.</i> (1-3+0)	
<b>ABUS F269</b>	<b>Food and Beverage Management</b>
<b>1-3 Credits</b>	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. <i>Prerequisites: ABUS F158 or permission of instructor.</i> (1-3+0)	
<b>ABUS F271</b>	<b>Business Communications</b>
<b>3 Credits</b>	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. <i>Prerequisites: ABUS F170 or permission of instructor.</i> (3+0)	
<b>ABUS F272</b>	<b>Small-Business Planning</b>
<b>3 Credits</b>	Offered Spring
Elements of small-business planning processes including the components of a written business plan. (3+0)	

<b>ABUS F273</b>	<b>Managing A Small Business</b>
<b>3 Credits</b>	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)	
<b>ABUS F274</b>	<b>E-commerce</b>
<b>1-3 Credits</b>	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. <i>Recommended: ABUS F273, BA F151 and CIOS F150.</i> (1-3+0)	
<b>ABUS F275</b>	<b>Applied International Business</b>
<b>3 Credits</b>	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. <i>Recommended: ABUS F273 and BA F151.</i> (3+0)	
<b>ABUS F288</b>	<b>Professional Certification Preparation</b>
<b>1-3 Credits</b>	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. <i>Recommended: Experience or course work in exam area. Course is intended as preparation for certification exam.</i> (1-3+0)	
<b>ABUS F299</b>	<b>Practicum in Applied Business</b>
<b>1-9 Credits</b>	
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. <i>Prerequisites: Permission of instructor.</i> (0+0)	

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## APPLIED PHOTOGRAPHY

<b>APHO F074</b>	<b>Process/Print Color Negatives</b>
<b>1 Credit</b>	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)	

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## ARABIC

<b>ARAB F100A</b>	<b>Elementary Arabic 1A (h)</b>
<b>3 Credits</b>	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)	
<b>ARAB F100B</b>	<b>Elementary Arabic 1B (h)</b>
<b>3 Credits</b>	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. <i>Prerequisites: ARAB F100A or permission of instructor.</i> (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 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 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 Digital Design (h)**  
**3 Credits**  
 This course provides an introduction to design principles and digital skills necessary for fine arts students. The course covers fundamentals of visual

design, drawing, and painting techniques on computer. Special fees apply. (1+4)

**ART F162 Color and Design (h)**  
**3 Credits**  
 Fundamentals of pictorial form, color principles and interactions. Emphasis on traditional art media rendered two dimensionally on paper. This course is recommended for students becoming B.A., B.F.A. Drawing, Painting, and Printmaking majors. 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. This course is recommended for students becoming B.A. or B.F.A. Art majors in Ceramics, Metalsmithing, Native Art and Sculpture. 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. (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)

<b>ART F213</b> <b>3 Credits</b>	<b>Beginning Painting (Acrylic or Oil) (h)</b>	<b>ART F284</b> <b>3 Credits</b>	<b>Basic Digital Photography (h)</b>
Basic materials and techniques in either medium. Pictorial principles and organization of paintings. <i>Prerequisites: ART F105; ART F161 or ART F162 or ART F163; or permission of instructor.</i> (1+4)		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. Cross-listed with JRN F204. (3+0)	
<b>ART F223</b> <b>3 Credits</b>	<b>Watercolor Painting (h)</b> Offered As Demand Warrants	<b>ART F301</b> <b>3 Credits</b>	<b>Intermediate Ceramics (h)</b>
Painting in various transparent and opaque media (watercolor, tempera, polymer, casein). Emphasis on techniques and subjects. <i>Prerequisites: ART F105; ART F161 or ART F162 or ART F163; or permission of instructor.</i> (1+4)		Continuation of beginning ceramics. Emphasis on developing proficiency in ceramic studio practices and processes. Special fees apply. <i>Prerequisites: ART F201 or permission of instructor.</i> (1+4)	
<b>ART F227</b> <b>3 Credits</b>	<b>Woven Fabric Design (h)</b>	<b>ART F305</b> <b>3 Credits</b>	<b>Advanced Drawing (h)</b> Offered Spring
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. Special fees apply. <i>Prerequisites: ART F127.</i> (1+4)		Development and refinement of individual problems in drawing. Can be repeated for credit with permission of instructor. Special fees apply. <i>Prerequisites: ART F205 or permission of instructor.</i> (1+4)	
<b>ART F233</b> <b>1 Credit</b>	<b>Beginning Field Painting (h)</b> Offered As Demand Warrants	<b>ART F307</b> <b>3 Credits</b>	<b>Intermediate Printmaking (h)</b>
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. <i>Recommended: ART F105; ART F213.</i> (0.5+1.5)		Continuation of ART F207 with emphasis on refinement of technique and color printing. Special fees apply. <i>Prerequisites: ART F207 or permission of instructor.</i> (1+4)	
<b>ART F261</b> <b>3 Credits</b>	<b>History of World Art (h)</b> Offered Fall	<b>ART F309</b> <b>3 Credits</b>	<b>Intermediate Metalsmithing and Jewelry (h)</b>
Origins of art and its development from the beginning through contemporary painting, sculpture and architecture. ART F261-F262 may be taken in reverse order; however, course content is presented in a chronological sequence beginning with fall semester. <i>Prerequisites: Sophomore standing.</i> (3+0)		Further investigation of material processes and techniques; some emphasis on design. Special fees apply. <i>Prerequisites: ART F209 or permission of instructor.</i> (1+4)	
<b>ART F262</b> <b>3 Credits</b>	<b>History of World Art (h)</b> Offered Spring	<b>ART F311</b> <b>3 Credits</b>	<b>Intermediate Sculpture (h)</b>
Origins of art and its development from the beginning through contemporary painting, sculpture and architecture. ART F261-F262 may be taken in reverse order; however, course content is presented in a chronological sequence beginning with fall semester. <i>Prerequisites: Sophomore standing.</i> (3+0)		Exploration in materials and concepts of sculpture. Emphasis on personal creativity and skill development. Special fees apply. <i>Prerequisites: ART F211 or permission of instructor.</i> (1+4)	
<b>ART F268</b> <b>3 Credits</b>	<b>Beginning Native Art Studio (h)*</b>	<b>ART F313 O</b> <b>3 Credits</b>	<b>Intermediate Painting (h)</b>
Understanding and applying the traditional designs and technologies of Native art. Special fees apply. <i>Prerequisites: ART F105 or permission of instructor.</i> Cross-listed with ANS F268. (1+4)		Continued development of expressive skills in painting in any media. Emphasis on pictorial and conceptual problems. <i>Prerequisites: ART F213; COMM F131X or COMM F141X.</i> (1+4)	
<b>ART F271</b> <b>3 Credits</b>	<b>Beginning Computer Art (h)</b> Offered Fall	<b>ART F324</b> <b>3 Credits</b>	<b>Watercolor Painting and Composition (h)</b> Offered Every Third Spring
Basic techniques of computer art. The course covers basic animation, motion graphics, digital painting and digital design. Special fees apply. <i>Prerequisites: ART F161.</i> (1+4)		Development of individual approach to watercolor media. Can be repeated for credit with permission of instructor. <i>Prerequisites: ART F223.</i> (1+4)	
<b>ART F283</b> <b>3 Credits</b>	<b>Basic Darkroom Photography (h)</b>	<b>ART F333</b> <b>1 Credit</b>	<b>Intermediate Field Painting (h)</b> Offered As Demand Warrants
Photography fundamentals, including use of an adjustable camera, film and exposure techniques, filters and flash techniques. 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. Cross-listed with JRN F203. (2+3)		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. <i>Prerequisites: ART F213 or ART F233. Recommended: ART F105; ART F205.</i> (0.5+1.5)	
		<b>ART F347 O</b> <b>3 Credits</b>	<b>Lighting Design (h)</b> 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. <i>Prerequisites: COMM F131X or COMM F141X. Recommended: THR F241; THR F247.</i> Cross-listed with THR F347. (3+0)	

## ART (ART)

**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 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 Imaging (h)**  
**3 Credits**  
This course focuses on creating and manipulating digital images, including digital painting and photography. The varied ethical issues engendered by this expertise will be addressed in depth. Skills in knowledge useful for digital photography, digital video compositing and digital painting will be covered. Special fees apply. *Prerequisites: ART F161 or ART F271 or ART F284/JRN F204 or FLM/JRN F290; COMM F131X or COMM F141X.* 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 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)

**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 F412 Portrait Photography**  
**3 Credits** Offered Fall  
This course will teach the student who has basic or advanced exposure and printing skills to further their understanding of the principles and techniques of portrait photography. Students will work with SLR or DSLR cameras and editing through a digital photo suite such as Adobe Photoshop. Students will learn to perfect their exposures and portrait skills, work with models, and handle studio strobes and equipment using traditional and

digital media. Assignments will focus on both technical and aesthetic concerns. In-class critiques will provide feedback on students' work and weekly slide shows will provide insight on historical and contemporary portrait photographers. Special fees apply. *Prerequisites: ART F483 or JRN F402; ART F487 or JRN F407 or permission of instructor.* Cross-listed with JRN F412. (3+0)

**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. Stacked with ART F625. (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)

<p><b>ART F447</b>      <b>Silkscreen (h)</b>  <b>3 Credits</b>      Offered As Demand Warrants  Silkscreen printing with photo process. May be repeated for credit with permission of instructor. Special fees apply. <i>Prerequisites: ART F105; ART F162; ART F207; or permission of instructor.</i> (1+4)</p>	<p><b>ART F471 O</b>      <b>Advanced Digital Design (h)</b>  <b>3 Credits</b>      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. <i>Prerequisites: COMM F131X or COMM F141X; JRN F250; JRN F350 or ART F371 or JRN F371; one college level studio art course.</i> Cross-listed with JRN F471. (1+4)</p>
<p><b>ART F453</b>      <b>Kiln Design and Construction (h)</b>  <b>3 Credits</b>      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. <i>Prerequisites: ART F201 or permission of instructor.</i> (1+4)</p>	<p><b>ART F472 O</b>      <b>3D Animation (h)</b>  <b>3 Credits</b>      Offered Fall  Concept and technique of 3D computer-generated 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. <i>Prerequisites: ART/FLM/THR F172; ART/FLM F371; or equivalent; COMM F131X or COMM F141X.</i> Cross-listed with FLM F472; JRN F472. (1+4)</p>
<p><b>ART F460</b>      <b>Cross-Cultural Filmmaking (h)</b>  <b>3 Credits</b>      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. Special fees apply. <i>Prerequisites: Junior, senior or graduate standing or permission of instructor.</i> Cross-listed: ANTH F460 and FLM F460 (3+0)</p>	<p><b>ART F474 W</b>      <b>History of the Role of the Artist (h)</b>  <b>3 Credits</b>      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. <i>Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor. Recommended: ART F261; ART F262.</i> Stacked with ART F673. (3+0)</p>
<p><b>ART F463</b>      <b>Seminar in Art History (h)</b>  <b>3 Credits</b>      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)</p>	<p><b>ART F475</b>      <b>Digital Video Compositing (h)</b>  <b>3 Credits</b>      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. <i>Prerequisites: ART F472 or JRN F472 or FLM F472 or equivalent.</i> Cross-listed with FLM F475. (1+4)</p>
<p><b>ART F465</b>      <b>Advanced Photography Seminar</b>  <b>3 Credits</b>      Offered Spring  Advanced discussion 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. <i>Prerequisites: JRN F402 or ART F483; JRN F404; or permission of instructor.</i> Cross-listed with JRN F405. Stacked with JRN F605 and ART F665. (2+3)</p>	<p><b>ART F483</b>      <b>Advanced Photography (h)</b>  <b>3 Credits</b>      Offered Spring  Continuation of JRN F203/ART F28. Emphasis on continuing development of photographic skills by application of basic technical skills to a variety of areas of photography. Special fees apply. <i>Prerequisites: JRN F203 or ART F283 or instructor permission.</i> Cross-listed with JRN F402. (2+3)</p>
<p><b>ART F467</b>      <b>Photoprocess Printmaking (h)</b>  <b>3 Credits</b>      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. <i>Prerequisites: ART F105; ART F262; ART F207; or permission of instructor.</i> (1+4)</p>	<p><b>ART F484</b>      <b>Multimedia Theory and Practice (h)</b>  <b>3 Credits</b>      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. <i>Prerequisites: Understanding of computer graphics programs like Illustrator, Freehand, etc. plus some mastery of a specialty in writing, art, or television production.</i> Cross-listed with JRN F484. Stacked with ART F684 and JRN F684. (3+3)</p>
<p><b>ART F468</b>      <b>Advanced Native Art Studio (h)✳</b>  <b>3 Credits</b>  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. <i>Prerequisites: ART F368 or permission of instructor.</i> Cross-listed with ANS F468. (1+4)</p>	<p><b>ART F487</b>      <b>Digital Darkroom</b>  <b>3 Credits</b>      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. <i>Prerequisite: JRN F203 or ART F283 or permission of instructor.</i> Cross-listed with JRN F407. (2.5+2)</p>
<p><b>ART F469 W</b>      <b>Architecture: Art, Design, Technology and Social Impact (h)</b>  <b>3 Credits</b>      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. <i>Prerequisites: ART F261 and ART F262 or HUM F201X and HUM F202; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.</i> Cross-listed with HUM F469. (3+0)</p>	<p><b>ART F490</b>      <b>Current Problems</b>  <b>3 Credits</b>      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</p>

## ART (ART)

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)

### 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 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. Note: May be repeated for credit. Graded Pass/Fail. *Prerequisites: Graduate standing or permission of instructor.* (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 F665 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. *Prerequisites: JRN F402; JRN F404; or permission of instructor.* Stacked with JRN F405 and ART F465. Cross-listed with JRN F605. (2+3)

### 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 in writing, art, or television production.* Cross-listed with JRN F684. Stacked with ART F484 and JRN F484. (3+0)

**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 atmosphere as an important part of our environment. Study of weather and climate that covers weather observation, composition and properties of the atmosphere, weather and circulation systems, forecasting weather based on fundamental laws of physics and chemistry. Students are required to make weather observations in Alaska. The students will use their local observations as a foundation and a vantage point to understand the regional and global behavior of the atmosphere (i.e., “Observe locally and connect globally”). *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.* Cross-listed with PHYS F413. Stacked with ATM F613 and PHYS F613. (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 F610 Analysis Methods in Meteorology and Climate**  
**3 Credits** Offered Spring Odd-numbered Years  
 Introduction to standard analysis topics in Atmospheric Sciences, including basic aggregate stats, time series work, eigenmode analysis, mixed models, and extreme value analysis. Focus on manipulation of very large data sets, especially weather/climate model output. Hands-on instruction in supporting computer topics. Student presentations will be emphasized. *Prerequisites: ATM F601; graduate standing; or permission of the instructor. Recommended: Basic computer and mathematical knowledge to analyze and plot data.* (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.* Cross-listed with PHYS F613. Stacked with ATM F413 and PHYS F413. (3+0)

## ATMOSPHERIC SCIENCES (ATM)

**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)

**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, MATLAB 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 Demand 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 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. *Prerequisites: Graduate standing or permission of instructor.* Cross-listed with PHYS F647. (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 parameterizations. Simplification and discretization of equations, numerical methods, model-grids, analytical modeling, boundary and initial conditions, parameterizations and evaluation of model results. Scale-dependency, limitations of parameterizations 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 F666 Atmospheric Remote Sensing**  
**3 Credits** Offered Spring Odd-numbered years  
Modern atmospheric research is becoming increasingly reliant on measurements made from afar using instruments sensing various portions of the electromagnetic spectrum. Using principally microwave radars and visible-wavelength laser lidars, often combined with passive measurements from radiometers, many properties of the atmosphere can be routinely profiled by remote sensors located at the ground, from aircraft, or satellite. This course will concentrate on the fundamentals of these families of active remote sensors including their designs and operating principles, applicable back-scattering and extinction theories, and derive their basic radar equation. *Prerequisites: ATM F401 or ATM F601; graduate standing or permission of instructor.* (3+0)

**ATM F673 Introduction to Micrometeorology**  
**3 Credits**  
A comprehensive explanation of micrometeorology, its basic theories of physics, mechanisms, measurement procedures, methods and how micrometeorological processes interact with the meso- and large-scale atmospheric motion. This class will deal with weather conditions on a small scale, both in terms of space and time. For example, weather conditions lasting less than a day in the area immediately surrounding a smokestack, a building, air flow in street channels, or a small air shed *Prerequisites: ATM F601; graduate standing or permission of the instructor.* (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**  
 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)

**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 brake 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

## AUTOMOTIVE (AUTO) — AVIATION TECHNOLOGY (AVTY)

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. (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. 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)

<p><b>AVTY F205</b> 3 Credits</p> <p>Preparation for certification as an instrument flight instructor. <i>Prerequisites: Commercial flight instructor certificate and department approval.</i> (3+0)</p> <p><b>AVTY F206</b> 4 Credits</p> <p>Preparation for the FAA airline transport pilot written exam. <i>Prerequisites: Compliance with FAR 61.151 and 61.155 or department permission.</i> (4+0)</p> <p><b>AVTY F207</b> 2 Credits</p> <p>Qualification for single- or multi-engine FAA airline transport pilot certificate. <i>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.</i> (2+0)</p> <p><b>AVTY F220</b> 3 Credits</p> <p>Understanding the physiology of flight and using this knowledge to explain why certain phenomena occur to the mind and body during flight. <i>Prerequisites: Pilot's Certificate or enrollment in Aviation program. Proof required first day of class.</i> (3+0)</p> <p><b>AVTY F226</b> 4 Credits</p> <p>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. <i>Prerequisites: FAA commercial pilot license and instrument rating or equivalent; department approval.</i> (4+0)</p> <p><b>AVTY F231</b> 3 Credits</p> <p>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)</p> <p><b>AVTY F232</b> 3 Credits</p> <p>Air navigation and astronomy, including charts, equipment, star and constellation identification, and calculations. (3+0)</p> <p><b>AVTY F235</b> 3 Credits</p> <p>Weather as it affects aircraft operators with an emphasis on interior Alaska. (3+0)</p> <p><b>AVTY F239</b> 4 Credits</p> <p>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)</p> <p><b>AVTY F402</b> 3 Credits</p> <p>Securing, dispatching and monitoring aircraft operations. Safety, security, community relations, cost-effective scheduling and personnel management for mission scheduling. (3+0)</p> <p><b>AVTY F405</b> 3 Credits</p> <p>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. <i>Prerequisites: AVTY F100 or AVTY F111 or AVTY F301 or permission of instructor.</i> (3+0)</p>	<p><b>Instrument Instructor Flying</b> Offered As Demand Warrants</p> <p><b>ATP Ground Instruction</b> Offered As Demand Warrants</p> <p><b>ATP Flying</b> Offered As Demand Warrants</p> <p><b>Basic Flight Physiology</b> Offered As Demand Warrants</p> <p><b>Flight Engineer Ground School</b> Offered As Demand Warrants</p> <p><b>Arctic Survival</b> ✨ Offered As Demand Warrants</p> <p><b>Aviation Astronomy and Navigation</b> Offered As Demand Warrants</p> <p><b>Elements of Weather</b> ✨ Offered As Demand Warrants</p> <p><b>Aircraft Dispatcher</b> Offered As Demand Warrants</p> <p><b>Aircraft Management</b> Offered As Demand Warrants</p> <p><b>Advanced Aircraft Operations</b> Offered As Demand Warrants</p>
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<p><b>AVTY F410</b> 2 Credits</p> <p>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. <i>Prerequisites: AVTY F231; AVTY F235; AVTY F301; commercial rating; 20 hours taildragger time.</i> (1+2)</p>	<p><b>Techniques of Bush Flying</b> ✨ Offered As Demand Warrants</p>
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## BIOLOGY

<p><b>BIOL F100X</b> 4 Credits</p> <p>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. 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. Special fees apply. <i>Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor. Offered through UAF Community and Technical College, eLearning &amp; Distance Education, Northwest and Rural campuses as demand warrants.</i> (3+3)</p> <p><b>BIOL F101X</b> 4 Credits</p> <p>This course explores the biological basis of animal behavior. Topics include mating systems, communication, habitat choice, feeding behavior, parental care, sperm competition, courtship and deception. The class will also examine the nature of science, including the process of posing and testing hypotheses. Special fees apply. May not be used as a biology elective for biological science majors. Special fees apply. <i>Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.</i> (3+3)</p> <p><b>BIOL F103L</b> 1 Credit</p> <p>A laboratory section only of BIOL F103X 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. <i>Prerequisites: A natural science course with no laboratory and permission of instructor.</i> (0+3)</p> <p><b>BIOL F103X</b> 4 Credits</p> <p>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. <i>Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.</i> (3+3)</p> <p><b>BIOL F104X</b> 4 Credits</p> <p>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. <i>Prerequisites: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.</i> (3+3)</p> <p><b>BIOL F115X</b> 4 Credits</p> <p>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</p>	<p><b>Human Biology</b> (n) Offered Fall As Demand Warrants</p> <p><b>Introduction to Animal Behavior</b> (n) Offered Fall</p> <p><b>Biology and Society Laboratory</b> Offered Spring</p> <p><b>Biology and Society</b> (n) Offered Spring; Fall at Northwest Campus</p> <p><b>Natural History of Alaska</b> (n) ✨ Offered Fall</p> <p><b>Fundamentals of Biology I</b> (n) Offered Fall</p>
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## BIOLOGY (BIOL)

be given preference when space is limited. Special fees apply. *Prerequisites:* Placement in ENGL F111X or higher; placement in MATH F151X or higher; CHEM F105X, may be taken concurrently; or permission of the 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. *Prerequisites:* Placement in ENGL F111X or higher; placement in MATH F151X or higher; CHEM F105X, may be taken concurrently; BIOL F115X; or permission of instructor. (3+3)

### BIOL F120X Introduction to Human Nutrition 4 Credits Offered Spring

This course provides students with a understanding of basic nutritional science and how the principles of nutrition can be used to achieve and maintain optimum health and well-being. Students will consider their own food choices in light of the scientific concepts covered in class. May not be used as a biology elective credit for a major in biological sciences. Special fees apply. *Prerequisites:* Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor. (3+3)

### BIOL F145 Introduction to Field Entomology ☼ 1 Credit Offered Summer

An introduction to field entomology techniques. Emphasized will be professional procedures to collect and process (sort, mount, and label) non-marine arthropods. The skills necessary to identify most groups to Order will be taught. Students will create a collection from which specimens will be chosen for the University of Alaska Museum Insect Collection and the Teaching Collection. Note: This course cannot be used as a biology elective by biological science majors. Graded Pass/Fail. Special fees apply. *Prerequisites:* Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor. (0.75+0.75)

### 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 majors; may not be used as biology elective credit for a major in biological science. Only available via eLearning & Distance Education. Special fees apply. (3+0)

### BIOL F213X 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. Special fees apply. *Prerequisites:* CHEM F103X or CHEM F105X; placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor. (3+3)

### BIOL F214X 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 F213X; CHEM F103X or CHEM F105X or permission of instructor. (3+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. Special fees apply. *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 UAF 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 or minor in biological sciences. (3+3)

### BIOL F260 Principles of Genetics 4 Credits

Principles of inheritance; physiochemical properties of genetic systems. Special fees apply. *Prerequisites:* BIOL F115X; BIOL F116X; CHEM F105X; MATH F151X or higher. (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. Special fees apply. *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. Special fees apply. *Prerequisites:* BIOL F116X and FISH F101; 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. Special fees apply. *Prerequisites:* BIOL F116X or equivalent; junior or senior standing. Cross-listed with FISH F301. (3+3)

### BIOL F310 Animal Physiology (n) 4 Credits Offered Spring

Animal function, including respiration, digestion, circulation, nerve and muscle function, hormones and reproduction. Special fees apply. *Prerequisites:* BIOL F115X; BIOL F116X; CHEM F105X; CHEM F106X. (3+3)

### BIOL F331 Systematic Botany (n) 4 Credits Offered Spring Odd-numbered Years

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 F260. (2+6)

**BIOL F335 Principles of Epidemiology**  
**3 Credits** Offered Spring  
 Introduction to the basic concepts of epidemiology, with examples from human to veterinary medicine, including chronic and infectious disease epidemiology, social epidemiology, outbreak investigation, properties of tests, and an introduction to study design and surveillance. Special fees apply. *Prerequisites: STAT F200X or higher or permission of instructor.* (3+0)

**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 F360 Cell and Molecular Biology**  
**3 Credits** Offered Fall or Spring  
 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 F260; CHEM F105X; CHEM F106X or concurrent enrollment.* Cross-listed with CHEM F360. (3+0)

**BIOL F371 Principles of Ecology**  
**4 Credits** Offered Fall  
 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 F400 Capstone Project**  
**0 Credits**  
 This course should be taken by students during the semester they initiate a capstone research project. The capstone project may be completed within a designated course or by working individually with a faculty mentor; see the biological sciences program description for more information. The duration of the capstone project may exceed one semester. Graded Pass/Fail. Special fees apply. *Prerequisites: Junior or senior standing.* (0+0)

**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. Special fees apply. *Prerequisites: ENGL F111X; 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 F403 W Metabolism and Biochemistry**  
**4 Credits** Offered Fall  
 Studies of the cells, genomics and proteomics of the nematode *Caenorhabditis elegans* have become a cornerstone of current biology. Using this simple and facile animal model, students will conduct their own biological investigations and, through this research learning, will gain an understanding of intermediary metabolism. Topics include major pathways of carbon, nitrogen, and lipid metabolism, structure and function of proteins, biological regulation and signaling, and longevity and aging. This course satisfies the writing-intensive requirement for a baccalaureate degree. Student projects in this course may satisfy the capstone project requirement of the biological sciences degree. Special fees apply. *Prerequisites: COMM*

*F121X or COMM F131X or COMM F141X; ENGL F11X; ENGL F211X or ENGL F213X; CHEM F105X; CHEM F106X; BIOL F360 or CHEM F360; or permission of instructor.* (2+2+6)

**BIOL F406 Entomology (n)**  
**4 Credits** Offered Fall Odd-numbered Years  
 Biology of insects and related arthropods, with emphasis on evolution, ecology, behavior, biodiversity, morphology and systematics. Lab emphasizes identification and collection. Special fees apply. *Prerequisites: BIOL F115X; BIOL F116X; BIOL F371; or permission of instructor.* (3+3)

**BIOL F412 Exercise Physiology**  
**3 Credits**  
 Physiology responses and adaptation to exercise in humans, emphasizing energy metabolism, adipose and lean tissue, central and peripheral components of oxidative metabolism and the environmental influences on these parameters. Special fees apply. *Prerequisites: BIOL F213X; BIOL F214X; or BIOL F310; or permission of instructor.* Stacked with BIOL F612. (3+0)

**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. Special fees apply. *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 sub-Arctic, polar and alpine regions. Special fees apply. *Prerequisites: BIOL F371 or NRM/BIOL F277; junior/senior standing; or permission of instructor.* Cross-listed with GEOG F418. Stacked with BIOL F618; GEOG F618. (3+0)

**BIOL F425 W Mammalogy (n)**  
**3 Credits** Offered Fall  
 Variety of mammals, their behavior, life histories, identification, phylogeny and systematics, morphology, distribution and zoogeography. Special fees apply. *Prerequisites: BIOL F115X; BIOL F116X; junior standing or above; or permission of instructor.* (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. Special fees apply. *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. Special fees apply. 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. Special fees apply. *Prerequisites: BIOL F371 or equivalent; BIOL F260 or equivalent; or permission of instructor. Recommended: BIOL F277; NRM F277.* Cross-listed with WLF F433. Stacked with BIOL F633; WLF F633. (3+0)

## BIOLOGY (BIOL)

**BIOL F434 W**      **Structure and Function of Vascular Plants**  
**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. Student projects in this course may satisfy the capstone project requirement of the biological sciences degree. Special fees apply. *Prerequisites: BIOL F115X; F116X; MATH F151X; STAT F200X; ENGL F111X; ENGL F211X or ENGL F213X; senior standing; or permission of instructor.* (3+3)

**BIOL F435**      **Introduction to Biology of Cancer**  
**3 Credits**  
Course covers current concepts and knowledge of cancer, including cancer research and cancer treatment. Special fees apply. *Prerequisites: BIOL F360; or permission of instructor.* Stacked with BIOL F635. (3+0)

**BIOL F441 W,O/2**      **Animal Behavior**  
**3 Credits**      Offered Fall  
Evolutionary and ecological principles of individual and social behavior, genetic and physiological basis of behavior, techniques of behavioral observation, experimental manipulation and analysis. Design and implementation of independent research project on live animals. Student projects in this course may satisfy the capstone project requirement of the biological sciences degree. Special fees apply. *Prerequisites: BIOL F310; STAT F200X; COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor. Co-requisite: BIOL F481.* (2+2+1)

**BIOL F455 O**      **Environmental Toxicology**  
**3 Credits**      Offered Fall 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 sub-Arctic 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; ENGL F111X; ENGL F211X or F213X; COMM F131X or COMM F141X.* Cross-listed with CHEM F455. Stacked with BIOL F656; CHEM F655. (3+0)

**BIOL F456**      **Winter Ecology**  
**3 Credits**      Offered Fall  
The focus of this course is on morphological, physiological and behavioral responses of animals and plants to winter conditions. Strategies of avoidance and tolerance of cold temperatures and low resources will be discussed. Analysis of physical and biological processes in seasonally snow-covered ecosystems. Includes principles of radiation and heat exchange, physics and chemistry of snow, thermoregulatory strategies in animals, and discussion of how winter affects trophic dynamics and population processes. Special fees apply. *Prerequisites: BIOL F371 (formerly BIOL F271) or permission of instructor.* (2+3)

**BIOL F457 W**      **Environmental Microbiology**  
**3 Credits**      Offered Spring Even-numbered Years  
This course focuses on the role of microorganisms in environmentally-relevant processes including bioremediation of pollutants, biogeochemical cycling, corrosion and wastewater treatment, including current methods for studying microbial diversity and function. Special fees apply. *Prerequisites: BIOL F115X; BIOL F116X; BIOL F342; CHEM F105X; CHEM F106X or equivalent; or permission of instructor. Recommended: CHEM F451 or BIOL F303 or equivalent.* Stacked with BIOL F657 (3+0)

**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. Student projects in this course may satisfy the capstone requirement of the biological sciences degree. Special fees apply.

*Prerequisites: COMM F131X or COMM F141X; BIOL F310; BIOL F371; or permission of instructor.* Cross-listed with WLF F460. Stacked with BIOL F659; WLF F660. (3+3)

**BIOL F460**      **Principles of Virology**  
**3 Credits**      Offered Spring  
This course will explore current concepts in the field of virology, with emphasis on the structure, genetic material, and replication strategies of various human and animal viruses. In addition, mechanisms of viral pathogenesis, viral diagnostics, prevention and treatment of viral infection will be presented. Special fees apply. *Prerequisites: BIOL F342; or permission of instructor* (3+0)

**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. Special fees apply. *Prerequisites: BIOL F261 or BIOL F342; or permission of instructor.* Stacked with BIOL F662. (3+0)

**BIOL F465**      **Immunology**  
**3 Credits**      Offered Spring  
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). Special fees apply. *Prerequisites: BIOL F115X and BIOL F116X and BIOL F310; or BIOL F213X and BIOL F214X; or permission of instructor.* (3+0)

**BIOL F466**      **Advanced Cell and Molecular Laboratory**  
**3 Credits**      Offered Spring  
Modern molecular biological techniques including protein and nucleic acid gel electrophoresis, western blotting, cell fractionation, cellular respiration, enzymology and fluorescence microscopy. Lectures will be supplemented with reading from the primary literature. Special fees apply. *Prerequisites: BIOL F360, may be taken concurrent; or permission of instructor.* (1.5+4.5)

**BIOL F469 O**      **Landscape Ecology and Wildlife Habitat**  
**3 Credits**      Offered As Demand Warrants  
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 F371 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. Special fees apply. *Prerequisites: A calculus course; BIOL F371.* (2+3)

**BIOL F472 W**      **Community Ecology**  
**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. Student projects in this course may satisfy the capstone project requirement of the biological sciences degree. Special fees apply. *Prerequisites: BIOL F371; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.* (2+3)

**BIOL F473 W**      **Limnology**  
**3 Credits**      Offered Fall  
The ecology of inland waters emphasizing lakes and rivers. Lecture provides graphically oriented view of concepts. Laboratory involves team-based original research from proposal to manuscript. Student projects in this course

may satisfy the capstone project requirement of the biological sciences degree. Special fees apply. *Prerequisites:* BIOL F115X; BIOL F116X; BIOL F371; CHEM F105X; CHEM F106X; ENGL F111X; ENGL F211X or F213X or *permission of instructor.* (2+3)

**BIOL F476 O Ecosystem Ecology**  
3 Credits Offered Spring Odd-numbered Years  
Focus on the biological and physical principles that govern functioning of terrestrial ecosystems. Emphasis on how plants, animals and micro-organisms control the movement of water, carbon and nutrients through ecosystems. Includes discussion of scientific literature and collection of original data. Special fees apply. *Prerequisites:* ENGL F111X; ENGL F211X or F213X; COMM F131X or F141X; BIOL F371; STAT F200X; or *permission of instructor.* (3+0.5)

**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 F260; 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 As Demand Warrants  
The ecology of streams and rivers focusing on physical, chemical and biological processes. Special fees apply. *Prerequisites:* BIOL F115X; BIOL F116X; BIOL F371. *Recommended:* CHEM F105X; CHEM F106X. (3+0)

**BIOL F485 W Global Change Biology** ❄️  
3 Credits Offered Fall  
Causes of climate change, the climate record, and the effects of past and forecast climate change on biophysical systems. Consideration of impacts on plants, animals, ice, and people with an emphasis on Alaska and the Arctic. Special fees apply. *Prerequisites:* BIOL F371; CHEM F105X; CHEM F106X; ENGL F111X; ENGL F211X or ENGL F213X or *permission of instructor.* 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. Special fees apply. *Prerequisites:* BIOL F310 or GEOS F315 or *permission of instructor.* Cross-listed with GEOS F486. Stacked with GEOS F686; BIOL F686. (2+3)

**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. Special fees apply. Cross-listed with PHIL F487. Stacked with BIOL F687; PHIL F687. (3+0)

**BIOL F488 Arctic Vegetation Ecology: Geobotany**  
3 Credits Offered Spring Even-numbered Years  
Arctic plants in relationship to Earth, including Arctic plant identification, climate, geology and geography controls on Arctic plant communities, snow ecology, applications to wildlife studies and current Arctic issues. Lecture, labs, and 1 winter field trip. Special fees apply. *Prerequisites:* BIOL F115 and BIOL F116 or equivalent; BIOL F239 or BIOL F371; or *approval of instructor.* Stacked with BIOL F688 (3+1)

**BIOL F489 Vegetation Description and Analysis**  
3 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

F239 or BIOL F233 or BIOL F371 or BIOL F331; or *permission of instructor.* Stacked with: BIOL F689 (2+3)

**BIOL F490 W Research Experience in Biology**  
3 Credits Offered Fall and Spring  
Provides undergraduate opportunities for student research in advanced life science topics beyond typical undergraduate laboratory or course offerings. Students are required to publicly present their work and submit a final report summarizing their work and suitable as a component of a submission to a discipline-specific journal. Research areas range across all life sciences subjects (evolution, ecology, physiology, cell biology, biochemistry, molecular biology, etc.). A substantial level of background in the specific discipline, a level commensurate with having achieved junior or senior standing, is assumed. Special fees apply. *Prerequisites:* CHEM F105X; CHEM F106X; BIOL F115X; BIOL F116X or *permission of the instructor.* (1+0+6)

**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. Special fees apply. *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. Special fees apply. *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. Special fees apply. *Prerequisite:* Graduate standing; or *permission of instructor.* (3+0)

**BIOL F612 Exercise Physiology**  
3 Credits  
Physiology responses and adaptation to exercise in humans, emphasizing energy metabolism, adipose and lean tissue, central and peripheral components of oxidative metabolism and the environmental influences on these parameters. Special fees apply. *Prerequisites:* Graduate standing; or *permission of instructor.* Stacked with BIOL F412. (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. Special fees apply. *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.

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Special fees apply. *Prerequisites: Graduate standing; or permission of instructor.* Cross-listed with WLF F614. (2+0)

**BIOL F615 Systematic and Comparative Biology**  
4 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 in lecture and lab. Special fees apply. *Prerequisites: Graduate standing; or permission of instructor.* (3+3)

**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. Special fees apply. *Prerequisites: Graduate standing; 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. Special fees apply. *Prerequisites: BIOL F310; 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 sub-Arctic, polar and alpine regions. Special fees apply. *Prerequisites: Graduate standing; or permission of instructor.* Cross-listed with GEOG F618. Stacked with BIOL F418; GEOG F418. (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. Special fees apply. *Prerequisites: Graduate standing; BIOL F471 or WLF F410; or permission of instructor.* Cross-listed with WLF F622. (3+0)

**BIOL F628 Advanced Immunology**  
3 Credits Offered Spring Even-numbered Years

Advanced level of knowledge and understanding of the structural and molecular basis of the innate and adaptive immune responses in terms of a complex system. Special fees apply. *Prerequisites: BIOL F465; BIOL F261 or F360 or equivalent; or permission of instructor.* Cross-listed with CHEM F628 (3+0)

**BIOL F632 Veterinary Bacteriology and Mycology**  
3 Credits

This course will discuss bacterial structure, differences between bacterial families, and fungi and their pathogenesis. The basic principles of bacterial and fungal pathogenesis will be presented. Host response to bacterial or fungal infection, immunity and the role of vaccines in disease prevention will be explained. Special fees apply. *Prerequisites: Successful completion of first semester veterinary courses.* Cross-listed with DVM F637; MSL F637. (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. Special fees apply. *Prerequisites: BIOL F260; BIOL F371 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 F634 Veterinary Parasitology**  
2 Credits Offered Spring

Biology of helminth, arthropod and protozoan pathogens of animals with emphasis on common infectious diseases encountered in veterinary practice will be discussed. In addition, the course will discuss treatment and management options for parasitic infections of domestic animals. *Prerequisites: Permission of instructor.* Cross-listed with DVM F638; MSL F638. (2+0)

**BIOL F635 Introduction to Biology of Cancer**  
3 Credits

Course covers current concepts and knowledge of cancer, including cancer research and cancer treatment. Special fees apply. *Prerequisites: BIOL F360; or permission of instructor.* Stacked with BIOL F435. (3+0)

**BIOL F639 Veterinary Virology**  
2 Credits Offered Spring

This course will explore current concepts in the field of veterinary virology, with an emphasis on the viral structure, viral genetic material and viral replication strategies of various animal viruses. In addition, mechanisms of viral pathogenesis, prevention and treatment of viral infection will be presented. Special fees apply. *Prerequisites: Successful completion of first semester veterinary courses.* (2+0)

**BIOL F640 Veterinary Pathology/Biology of Disease I**  
5 Credits Offered Spring

This course will discuss basic principles of disease with special emphasis on processes likely to be encountered in veterinary practice. We will discuss these topics organized by underlying disease mechanism. The discussions will move from general cell mediated processes to more specific disease mechanisms. *Prerequisites: Successful completion of first semester veterinary courses.* Cross-listed with MSL F642; DVM F640. (4+3)

**BIOL F644 Advanced Topics in Evolution**  
3 Credits Offered Spring

Modern theory and interdisciplinary directions in the expanding field of evolutionary biology. Topics include adaptation, speciation, reinforcement, 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. Special fees apply. *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 F260; 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. Special fees apply. *Prerequisites: Graduate standing; 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. 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. 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. Special fees apply. **Prerequisites:** *Graduate standing; or permission of instructor. Recommended: ANTH/BIOL/ECON/NRM F647; ANTH/BIOL/ECON/NRM F667.* Cross-listed with ANTH F649; ECON F649; NRM F649. (3+0)

**BIOL F656 Environmental Toxicology**  
3 Credits Offered Fall 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 sub-Arctic 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 CHEM F655. Stacked with BIOL F455; CHEM F455. (3+0)

**BIOL F657 Environmental Microbiology**  
3 Credits Offered Fall

This course focuses on the role of microorganisms in environmentally-relevant processes including bioremediation of pollutants, biogeochemical cycling, corrosion and wastewater treatment, including current methods for studying microbial diversity and function. Special fees apply. **Prerequisites:** *BIOL F115X; BIOL F116X; BIOL F342; CHEM F105X; CHEM F106X or equivalent; or permission of instructor. Recommended: CHEM F451 or BIOL F303 or equivalent.* Stacked with BIOL F457 (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. Special fees apply. **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 Odd-numbered Years

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 F666 Scientific Teaching**  
2 Credits Offered Spring Even-numbered Years

This course explores methods for teaching science at the university level. Emphasis is placed on methods of course design, instructional techniques, assessment and course management that have been shown by research to improve student learning. This course is intended for graduate students in the sciences who have an interest in improving their teaching skills. The course format will be a mixture of discussion, workshops and seminars. If the course is over-enrolled, priority will be given to teaching assistants who are assigned to teach large, introductory level (100 or 200 level)

courses during the semester they are taking this course. Special fees apply. **Prerequisites:** *Graduate standing or permission of the instructor.* (2+0)

**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. Special fees apply. **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. Special fees apply. **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 As Demand Warrants

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. Special fees apply. **Prerequisites:** *Graduate standing; or permission of instructor.* (2+2)

**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. Special fees apply. **Prerequisites:** *Graduate standing; BIOL F239; BIOL F334; BIOL F474; or permission of instructor.* (2+3)

**BIOL F676 Interdisciplinary Modeling of High Latitude Global Change** ☼  
4 Credits Offered Fall Odd-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. Special fees apply. **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. Special fees apply. **Prerequisites:** *BIOL F474; graduate standing; or permission of instructor.* (3+0)

**BIOLOGY (BIOL) — BUSINESS ADMINISTRATION (BA)**

**BIOL F679 Cellular and Molecular Neuroscience**  
**3 Credits** Offered Fall Even-numbered Years  
 The goal of this course is to provide an overview of the cellular and molecular underpinnings of signaling in the nervous system. Discussions will be focused on properties of excitable membranes, synaptic transmission, and neurological integration. Fundamentals of the functional properties of neurons will provide the background for discussions of small neuronal circuits that regulate behavior, the cellular/molecular basis of learning and memory, and pharmacological approaches for the treatment of neuronal pathologies. Special fees apply. *Prerequisites: Two F300-level courses in BIOL or CHEM; MATH F251X or MATH F232X; or permission of instructor. Recommended: MATH F252X.* Cross-listed with CHEM F670. (3+0)

**BIOL F680 Data Analysis in Biology**  
**3 Credits** Offered Fall  
 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. Special fees apply. *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. Special fees apply. *Prerequisites: Graduate standing; 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. Special fees apply. Cross-listed with PHIL F687. Stacked with BIOL F487; PHIL F487. (3+0)

**BIOL F688 Arctic Vegetation Ecology: Geobotany**  
**3 Credits** Offered Spring Even-numbered Years  
 Arctic plants in relationship to Earth, including Arctic plant identification, climate, geology and geography controls on Arctic plant communities, snow ecology, applications to wildlife studies and current Arctic issues. Lecture, labs and 1 winter field trip. Special fees apply. *Prerequisites: BIOL F115X and BIOL F116X or equivalent; BIOL F239 or BIOL F371; or permission of instructor.* Stacked with BIOL F488. (3+1)

**BIOL F689 Vegetation Description and Analysis**  
**3 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 F239 or BIOL F233 or BIOL F371 or BIOL F331; or permission of instructor.* Stacked with BIOL F489 (2+3)

**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 students enrolling in one or more School of Management courses (ACCT, AIS, BA, ECON, HSEM, LEAD, and MBA) 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. (3+0)

**BA F235 Entrepreneurship**  
**3 Credits** Offered As Demand Warrants  
 This course takes a hand-on, problem-based learning approach that works through real problems faced by entrepreneurs and small business owners. Using real-world scenarios and exercises throughout, the student will gain experience in the roles of small business, financial analyst, marketer and business owner in order to find solutions. A business research approach preparing students to help themselves and others within their community to complete a feasibility study. *Prerequisites: BA F151; ACCT F261.* (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. This course is cross-listed with LEAD F280. (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. Special fees apply. *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)

**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. Special fees apply. *Prerequisite: ENGL F111X or equivalent.* (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. Special fees apply. *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. Special fees apply. (3+0)

**BA F325      Financial Management****3 Credits**

Time value of money, bond and stock valuation, capital budgeting, risk-return trade-offs and option pricing. Special fees apply. *Prerequisites: ACCT F261; ECON F201; ECON F202; ECON F227; MATH F222X or MATH F251X.* (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. Special fees apply. (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. Special fees apply. *Prerequisites: ENGL F111X or equivalent; COMM F131X or COMM F141X or equivalent.* (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. Special fees apply. *Prerequisites: AIS F101; ECON F227.* (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. Special fees apply. *Prerequisite: ENGL F111X or equivalent.* (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. Special fees apply. *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. Special fees apply. *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. Special fees apply. *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. Special fees apply. *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. Special fees apply. *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. Special fees apply. *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 course work in a business environment. Admission dependent upon approved sponsorship arrangements. Repeated for a maximum of six credits. Special fees apply. *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. Special fees apply. *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. Special fees apply. *Prerequisites: BA F454; upper division B.B.A. standing; permission of the SOM advisor or instructor.* (3+0)

**BUSINESS ADMINISTRATION (BA) — CHEMISTRY (CHEM)**

**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, tax regulations and employee supervision. Special fees apply. *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. Special fees apply. *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. Special fees apply. *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. Special fees apply. *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. Special fees apply. *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.* (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. Special fees apply. *Prerequisites: BA F307; BA F390.* (3+0)

**BA F470**      **Leadership Theory and Development**  
**3 Credits**      Offered Alternate Spring  
A guide for interpreting leadership theories related to one another, and how students can apply the leadership theories to their personal development. Special fees apply. *Prerequisite: ENGL F111X; ENGL F211X or ENGL F213X; COMM F131X or COMM F141X or COMM F141X and BA F390.* (3+0)

**BA F472**      **Leading Change**  
**3 Credits**      Offered Alternate Fall  
The course is designed to explore some of the technologies for intervening in organizations to develop their capability and to achieve change. We explore the way in which change agents deal with their conflicting demands. The thrust of the text is how to become a leading change agent within an organization and extend your understanding and application of key concepts and theories. Special fees apply. *Prerequisites: ENGL F211X or ENGL F213X; COMM F131X or COMM F141X; BA F390 or permission of instructor.* (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. Special fees apply. *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. Special fees apply. *Prerequisites: BA F343.* (3+0)

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**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 F151X 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 F151X 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

Introduction to coordination theory, crystal field theory, kinetics and mechanisms of substitutions and redox reactions, unit cells and ionic bonding, periodic law, and descriptive chemistry of selected main group elements. 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 F151X or equivalent.* (3+3)

**CHEM F314 W** Analytical Instrumental Laboratory (n)  
3 Credits Offered Spring

A laboratory course focusing on the acquisition and interpretation of spectroscopic and chromatographic data for qualitative characterization and quantitative chemical measurements. Students will learn to design and execute experiments with a variety of instruments, critically evaluate experimental data, and communicate their findings through scientific writing. Special fees apply. *Prerequisites: CHEM F212; ENGL F211X or ENGL F213X and must be a Chemistry major or have permission of the instructor.* (1+6)

**CHEM F321** Organic Chemistry I (n)  
4 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. Lab portion will include an introduction to synthetic techniques and spectroscopy. Special fees apply. *Prerequisites: CHEM F106X or permission of instructor.* (3+3)

**CHEM F325** Organic Chemistry II (n)  
4 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. Lab portion will include synthesis and characterization by spectroscopy. *Prerequisites: CHEM F321.* (3+3)

**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 F252X; 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. Special fees apply. *Prerequisites: CHEM F331; MATH F253X; or permission of instructor.* (3+3)

**CHEM F351** 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 F321; or permission of instructor. Recommended: CHEM F331.* (3+0)

**CHEM F360** Cell and Molecular Biology  
3 Credits Offered Fall or Spring

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. *Prerequisites: BIOL F260; CHEM F105X; CHEM F106X or concurrent enrollment.* Cross-listed with BIOL F360. (3+0)

**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 F419** Practical Nuclear Magnetic Resonance  
1 Credit

Students will be trained in the basic operation of NMR instruments. Students will spend much of the class time getting hands-on experience on the NMR with student-driven NMR-based research projects. At the end of the course, students will present their projects to the rest of the class. Special fees apply. *Prerequisites: CHEM F321.* (0.5+1.5)

**CHEM F420** Applications of NMR Spectroscopy  
3 Credits Offered Fall Even-numbered Years

Application of nuclear magnetic resonance (NMR) spectroscopy in the chemical and biochemical sciences. The course will focus on the implementation and interpretation of NMR experiments for solving research problems. Topics include the basic theory of NMR and one- and two-dimensional techniques. *Prerequisites: CHEM F321; CHEM F322.* Stacked with CHEM F620. (3+0)

**CHEM F434 W** Chemistry Capstone Laboratory (n)  
3 Credits Offered Fall

A capstone laboratory course with three major components: 1) experiments related to concepts learned in physical, analytical and inorganic chemistry courses emphasizing kinetics, spectroscopy and thermodynamics; 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; CHEM F212; CHEM F202 or permission of instructor. Co-requisites: CHEM F332.* (1+6)

**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

## CHEMISTRY (CHEM)

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 F455 O Environmental Toxicology 3 Credits Offered Fall 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 sub-Arctic regions. *Prerequisites: CHEM F451; BIOL F303; or one semester each of organic chemistry and cell or molecular biology; or permission of instructor; ENGL F111X; ENGL F211X or F213X; COMM F121X or COMM F131X or COMM F141X.* Cross-listed with BIOL F455. Stacked with BIOL F656; CHEM F655. (3+0)

### CHEM F466 Advanced Cell and Molecular Laboratory 3 Credits Offered Spring

Modern molecular biological techniques including protein and nucleic acid gel electrophoresis, western blotting, cell fractionation, cellular respiration, enzymology and fluorescence microscopy. Lectures will be supplemented with reading from the primary literature. *Prerequisites: BIOL F360, may be taken concurrent; or permission of instructor.* (1.5+4.5)

### CHEM F470 Cellular and Molecular Neuroscience 3 Credits Offered Fall Even-numbered Years

The goal of this course is to provide an overview of the cellular and molecular underpinnings of signaling in the nervous system. Discussion will be focused on properties of excitable membranes, synaptic transmission, and neurological integration. Fundamentals of the functional properties of neurons will provide the background for discussions of small neuronal circuits that regulate behavior, the cellular/molecular basis of learning and memory, and pharmacological approaches for the treatment of neuronal pathologies. *Prerequisites: Two F300-level courses in BIOL or CHEM; MATH F251X or MATH F232X; or permission of instructor. Recommended: MATH F252X* Stacked with CHEM F670. Cross-listed with BIOL F679. (3+0)

### CHEM F474 Neurochemistry 3 Credits Offered Fall Odd-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 F325; BIOL F417O or CHEM F470 or PSY F335.* Stacked with CHEM F676. (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. *Prerequisites or Co-requisites: CHEM F434 or CHEM F314; or permission of instructor.* (0+6-9)

### CHEM 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 ATM F601. Stacked with ATM F401. (3+0)

### CHEM F602 Bioinorganic Chemistry 3 Credits Offered Fall Even-numbered Years

Survey of structure, functions, and chemical properties of natural metalloproteins and metalloenzymes, roles of metalloproteins in nucleic acid formation and replication, metal-based medicines. *Prerequisites: CHEM F351; or CHEM F450.* (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 Odd-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 F618 Crystallography and Diffraction 3 Credits Offered Spring Even-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 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. *Prerequisite: Graduate standing; or permission of instructor.* (3+2)

**CHEM F620 Applications of NMR Spectroscopy**  
3 Credits Offered Fall Even-numbered Years

Applications of nuclear magnetic resonance (NMR) spectroscopy in the chemical and biochemical sciences. The course will focus on the implementation and interpretation of NMR experiments for solving research problems. Topics include the basic theory of NMR and one- and two-dimensional techniques. *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 F351.* (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 F325.* (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 F628 Advanced Immunology**  
3 Credits Offered Fall Odd-numbered Years

Advanced level of knowledge and understanding of the structural and molecular basis of the innate and adaptive immune responses in terms of a complex system. *Prerequisites: BIOL F465; BIOL F261 or F360 or equivalent; or permission of instructor.* Cross-listed with BIOL F628 (3+0)

**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 F654 Protein Structure and Function**  
3 Credits Offered Spring Even-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. *Prerequisite: CHEM F351.* (3+0)

**CHEM F655 Environmental Toxicology**  
3 Credits Offered Fall 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 sub-Arctic regions. *Prerequisites: CHEM F351; BIOL F303; or one semester each of organic chemistry and cell or molecular biology; or permission of instructor.* Cross-listed with BIOL F656. Stacked with BIOL F455; CHEM F455. (3+0)

**CHEM F657 Molecular Foundations of Gene Expression**  
3 Credits Offered Spring 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 F351; 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 F351; CHEM F450; graduate standing; or permission of instructor.* (1+6)

**CHEM F660 Chemical Oceanography**  
3 Credits Offered Spring

An integrated study of the chemical, biological, geological and physical processes that determine the distribution of chemical variables in the sea. Topics include biogeochemical cycles and the use of tracers to follow these complex chemical cycles. The chemistry of carbon is considered in detail. Interactions with the atmosphere and lithosphere (including implications of the mid-ocean ridge vent system to ocean chemistry) are examined. *Prerequisites: Graduate standing.* Cross-listed with MSL F660. Stacked with MSL F461. (3+0)

**CHEM F666 Scientific Teaching**  
2 Credits Offered Spring Even-numbered Years

This course explores methods for teaching science at the university level. Emphasis is placed on methods of course design, instructional techniques, assessment and course management that have been shown by research to improve student learning. This course is intended for graduate students in the sciences who have an interest in improving their teaching skills. The course format will be a mixture of discussion, workshops and seminars. If the course is over-enrolled, priority will be given to teaching assistants who are assigned to teach large, introductory level (100 or 200 level) courses during the semester they are taking this course. *Prerequisites: Graduate standing; or permission of instructor.* Cross-listed with STO F666; BIOL F666; GEOS F666. (2+0)

**CHEM F670 Cellular and Molecular Neuroscience**  
3 Credits Offered Fall Even-numbered Years

The goal of this course is to provide an overview of the cellular and molecular underpinnings of signaling in the nervous system. Discussions will be focused on properties of excitable membranes, synaptic transmission, and neurological integration. Fundamentals of the functional properties of neurons will provide the background for discussions of small neuronal circuits that regulate behavior, the cellular/molecular basis of learning and memory, and pharmacological approaches for the treatment of neuronal pathologies. *Prerequisites: Two F300-level courses in BIOL or CHEM; MATH F251X or MATH F232X; or permission of instructor. Recommended: MATH F252X.* Cross-listed with BIOL F679. (3+0)

## CHEMISTRY (CHEM) — CHINESE (CHNS)

**CHEM F671 Receptor Pharmacology**  
**3 Credits** Offered Spring Odd-numbered Years  
Covers basic drug/receptor theory to train students to a) assess affinity and efficacy of receptor ligands; b) work with and interpret functional assays and binding results; c) critically evaluate original research regarding receptor pharmacology with an emphasis on ligand-gated ion channels and G-protein coupled receptors; and c) identify testable hypotheses and design experiments to test these hypotheses. *Prerequisites: Upper-division or graduate biochemistry or neurochemistry course or permission of instructor.* *Recommended: BIOL F417 Neurobiology is recommended.* (3+0)

**CHEM F674 Membrane Biochemistry and Biophysics**  
**3 Credits** Offered Spring Odd-numbered Years  
Basic biophysical and molecular processes associated with membrane-mediated events in the context of cellular physiology. Major topics include 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 F351; CHEM F456; CHEM F461 or equivalent; or permission of instructor.* (3+0)

**CHEM F675 Cellular Signaling**  
**3 Credits** Offered Spring Odd-numbered Years  
Cellular signaling is of vital importance in complex biomolecular systems, development, physiology, and pathology and thus, constitutes a major topic in modern medical and pharmacological research. This course concentrates on cellular signal transduction and regulation in higher animals and humans. Major topics include G-proteins, Protein kinases, Ca<sup>2+</sup>, cAMP, lipid mediators, adaptor proteins and signal recognition domains. *Prerequisites: Upper division or graduate biochemistry or neurochemistry course or permission of instructor.* (3+0)

**CHEM F676 Neurochemistry**  
**3 Credits** Offered Fall Odd-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 F325; BIOL F417O or CHEM F470 or PSY F335.* Stacked with CHEM F474. (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 Fall  
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)

## CHINESE

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. CHNS F101-F102 may be used to meet this requirement but then may not be used to meet the humanities degree requirement.

**CHNS F100A Chinese Culture and Conversation IA**  
**3 Credits** Offered As Demand Warrants  
An introductory course in Chinese language and culture with an emphasis on the spoken pronunciation, and contemporary use of the language. This class does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements. (3+0)

**CHNS F100B Chinese Culture and Conversation IB**  
**3 Credits** Offered As Demand Warrants  
A continuation of introduction to the Chinese language and culture with an emphasis on the spoken and written language. Course will focus on language skills to include grammar, vocabulary, pronunciation, and contemporary use of the language. This class does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements. *Prerequisites: CHNS F100A or permission of the instructor.* (3+0)

**CHNS F100C Chinese Culture and Conversation IIA**  
**3 Credits** Offered As Demand Warrants  
This is the first semester course of second-year examination of Chinese culture and conversation (a continuation of CHNS F100B). The student will continue to progress in the basic skills of listening, speaking, reading, and writing by learning more characters/vocabulary and broadened sentence patterns. Grammar and sentence pattern analysis will be presented systematically with respect to the course materials to help students establish a solid foundation for the use of language. *Prerequisites: CHNS F100B or permission of the instructor.* (3+0)

**CHNS F100D Chinese Culture and Conversation IIB**  
**3 Credits** Offered As Demand Warrants  
The second semester course of second-year examination of Chinese culture and conversation (a continuation of CHNS F100C). The student will continue to progress in the basic skills of listening, speaking, reading, and writing by learning more characters/vocabulary and broadened sentence patterns. Grammar and sentence pattern analysis will be presented systematically with respect to the course materials to help students establish a solid foundation for the use of language. *Prerequisites: CHNS F100C or permission of the instructor.* (3+0)

**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 F152.* (2+3)

### CE F302 Introduction to Transportation Engineering 3 Credits Offered Spring

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. Special fees apply. *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 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)

### CE F406 Traffic Engineering 3 Credits

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. *Prerequisite: CE F302.* (2+3)

### 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 F424 Introduction to Permafrost Engineering ✱ 3 Credits Offered Fall

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.* Stacked with CE F624. (3+0)

### 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 Spring

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. Current ACI 318 Code used. Special fees apply. *Prerequisites: CE F331; ES F331.* (3+0)

### CE F434 Timber Design 3 Credits Offered Fall Odd-numbered Years

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.* (3+0)

### 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,

## CIVIL ENGINEERING (CE)

management and control. Water and wastewater treatment and solid waste management. Special fees apply. *Prerequisites:* CE F341. (3+0)

### CE F443 Air Pollution Management

3 Credits Offered Spring Odd-numbered Years

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. *Prerequisites:* CHEM 106X or equivalent. *Recommended:* MATH F252X; *graduate standing; or permission of instructor.* Stacked with ENVE F643. (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 F490-F491, 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 F491 Civil Engineering Seminar

0.5 Credit Offered Spring

CE F490-F491, 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 As Demand Warrants

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 F620 Construction Project Management

3 Credits

Offered As Demand Warrants

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 F624 Frozen Ground Engineering ❄️

3 Credits

Offered Fall

Nature of frozen ground, thermal properties of frozen soils, classification, physical and mechanical properties of frozen soils, subsurface investigation of frozen ground and hazards, thaw settlement and thaw consolidation, slope stability and principles of foundation design in frozen ground. *Prerequisites:* Training or experience in soil mechanics. Stacked with CE F424. (3+0)

### CE F625 Soil Stabilization and Embankment Design

3 Credits

Offered As Demand Warrants

Soil and site improvement using deep and shallow compaction, additives, pre-loading, 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 As Demand Warrants

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)

<b>CE F633</b> <b>3 Credits</b>	<b>Theory of Elastic Stability</b> Offered Spring Odd-numbered Years	<b>CE F659A</b> <b>1 Credit</b>	<b>Mentoring</b> Offered As Demand Warrants
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. <i>Prerequisites: CE F331; CE F432; MATH F302.</i> (3+0)		This course will provide insight into how to “train the trainer.” It will incorporate the role of HR in department and relevant case studies to enable students to understand key principles, and learn skills and behaviors to enhance knowledge transfer. (4.5+0)	
<b>CE F634</b> <b>3 Credits</b>	<b>Structural Dynamics</b> Offered As Demand Warrants	<b>CE F660A</b> <b>1 Credit</b>	<b>Project Management Boot Camp</b> 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. <i>Prerequisites: ES F210; CE F331; MATH F302.</i> (3+0)		This course provides “basic training” in project management fundamentals, with emphasis on the management of engineering and construction projects. Much of the discussion is centered on the “triple constraint” of cost, schedule, and quality/scope. Topics include project characteristics; the project life cycle; project organizations, teams and leadership; planning, monitoring and controlling each element of the triple constraint; and project termination and phase-out. Planning issues include the project charter and scope statement, the work breakdown structure, and both network- and non-network-based scheduling techniques. <i>Prerequisites: Permission of instructor.</i> (4.5+0)	
<b>CE F635</b> <b>3 Credits</b>	<b>Numerical Methods for Geo-Mechanics and Soil-Structure Interaction</b> Offered As Demand Warrants	<b>CE F661</b> <b>3 Credits</b>	<b>Advanced Water Resources Engineering</b> Offered Spring Odd-numbered Years
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. <i>Prerequisites: CE F326; graduate standing; or permission of instructor. Recommended: MATH F302.</i> (3+0)		Engineering hydraulics and hydrology including use of standard computer models to solve water resource engineering problems. <i>Recommended: Permission of instructor.</i> (3+0)	
<b>CE F637</b> <b>3 Credits</b>	<b>Earthquakes: Seismic Response of Structures</b> Offered As Demand Warrants	<b>CE F662</b> <b>3 Credits</b>	<b>Open Channel and River Engineering</b> Offered Spring Even-numbered Years
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. <i>Prerequisites: ES F210 or permission of instructor.</i> (3+0)		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. <i>Recommended: Permission of instructor.</i> (3+0)	
<b>CE F640</b> <b>3 Credits</b>	<b>Prestressed Concrete</b> Offered As Demand Warrants	<b>CE F663</b> <b>3 Credits</b>	<b>Groundwater Dynamics</b> Offered Fall Even-numbered Years
Theory and practice of prestressed concrete design. Pre-tensioning and post-tensioning. Anchorage of steel. Materials, design specifications. Application in bridges, tanks and slabs. <i>Prerequisites: CE F331; CE F433. Recommended: Graduate standing.</i> (3+0)		Fundamentals of geohydrology, hydraulics of flow through porous media, well hydraulics, groundwater pollution, and groundwater resources development. <i>Recommended: Permission of instructor.</i> (3+0)	
<b>CE F646</b> <b>3 Credits</b>	<b>Structural Composites</b> Offered As Demand Warrants	<b>CE F664</b> <b>3 Credits</b>	<b>Sediment Transport</b> Offered Spring Even-numbered Years
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. <i>Prerequisites: ES F331; CE F331 or permission of instructor.</i> (3+0)		Fundamentals of sediment transport processes in rivers, oceans and reservoirs. Bed-load and suspended-load transports. Mechanics of turbidity currents. Reservoir sedimentation. Numerical modeling. <i>Prerequisites: Graduate standing or permission of instructor.</i> (3+0)	
<b>CE F650</b> <b>3 Credits</b>	<b>Bridge Engineering</b> Offered As Demand Warrants	<b>CE F682</b> <b>3 Credits</b>	<b>Ice Engineering</b> ❄️ Offered Spring Odd-numbered Years
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. <i>Prerequisites: CE F432; CE F433; or permission of instructor.</i> (3+0)		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. <i>Prerequisites: ES F331, MATH F253X, training or experience in soil mechanics.</i> (3+0)	
<b>CE F652C</b> <b>1 Credit</b>	<b>Pre-Construction Contracts</b> Offered As Demand Warrants	<b>CE F683</b> <b>3 Credits</b>	<b>Arctic Hydrology and Hydraulic Engineering</b> ❄️ Offered Fall Odd-numbered Years
Provides an introduction to determining scope and scheduling needs for architectural and engineering contracts and other design-related contracts. A review of type of contracts and procurement methods available. Handling changes within the pre-construction contract. (4.5+0)		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. <i>Prerequisites: CE F344 or equivalent.</i> (3+0)	
		<b>CE F684</b> <b>3 Credits</b>	<b>Arctic Utility Distribution</b> ❄️ Offered As Demand Warrants
		Practices and considerations of utility distribution in Arctic regions. Emphasis on proper design to include freeze protection, materials, energy conservation and system selection. <i>Prerequisites: ES F341 or permission of instructor.</i> (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 F121X**      **Introduction to Interpersonal Communication**  
**3 Credits**  
 This course features the fundamental principles of effective oral communication, emphasizing interpersonal communication as well as public speaking. Through role playing, speeches and evaluations of other speakers, students explore the complexities of communication in today's society. (3+0)

**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 F201**      **Dispute Resolution and Restorative Practices (s)**  
**3 Credits**  
 This course surveys the basic practical and theoretical foundations of conflict, conflict resolution and restorative practices. It introduces students to the basic theories and practices of conflict resolution and peace-making, providing students with grounding in theories, applications and dynamics of conflict and key conflict resolution processes. *Prerequisites: ENGL F111X; COMM F131X or COMM F141X; PS/ECON F100X or JUST F110.* (3+0)

**COMM F210**      **Argumentation and Critical Thinking**  
**3 Credits**      Offered Spring  
 Introduction to argumentation, emphasizing the process of constructing and evaluating sound arguments based on reasoning, evidence, and strategy. *Prerequisite: ENGL F111X or permission of instructor* (3+0)

**COMM F220**      **Professional Interviewing**  
**3 Credits**      Offered As Demand Warrants  
 The theory and practice of methods in selected interview settings: emphasis on interpersonal communication between two persons, questioning techniques, and the logical and psychological bases of interpersonal persuasion. *Prerequisites: ENGL F111X or permission of instructor.* (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. *Prerequisites: Junior standing; placement in ENGL F111X or higher; or permission of instructor.* (3+0)

**COMM F302**      **Dispute Systems Design (s)**  
**3 Credits**      Offered Summer and Fall  
 This course examines the hidden sources of conflicts that are often embedded in social, legal, political, and organizational structures and systems. This course will be focused on all aspects of structural, systemic conflict, and introduces ways to harness conflict for positive organizational outcomes. *Prerequisites: JUST F201; ENGL F211X or ENGL F213X; or permission of the 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)

**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 3 Credits	<b>Gender and Communication (s)</b> Offered Fall	COMM F441 3 Credits	<b>Persuasion (s)</b>
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. <i>Prerequisites: Any lower-division communication course or permission of instructor.</i> Cross-listed with WGS F351. (3+0)		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. <i>Prerequisites: Any F300-level communication course or permission of instructor.</i> (3+0)	
COMM F352 3 Credits	<b>Family Communication (s)</b>	COMM F451 3 Credits	<b>Cross-cultural Conflict Analysis and Intervention</b> Offered Spring.
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. <i>Prerequisites: Any lower-division communication course or permission of instructor. Recommended: COMM F322.</i> (3+0)		Students will learn key concepts and skills that will help them respond to cross-cultural and human rights conflicts in a productive manner. Students will learn basic conflict analysis for cross-cultural and human rights disputes, including those occurring in rural Alaska. By the end of the course students will understand the theoretical assumptions that drive these conflicts and will learn tools to resolve them. <i>Prerequisites: JUST F302; ENGL F211X or ENGL F213X; or permission of the instructor.</i> (3+0)	
COMM F353 3 Credits	<b>Conflict, Mediation, and Communication (s)</b>	COMM F452 3 Credits	<b>Law and Science of Arbitration (s)</b> Offered Spring
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. <i>Prerequisites: Any F100-level communication course or permission of instructor.</i> (3+0)		This course covers the law, social science, policy and practices relating to arbitration as it is utilized in both the private and public sector. Students will learn the history of arbitration, its applications, its rules of evidence, administering institutions and their rules, arbitral remedies and awards, grounds for judicial review, and its hybrid use with other processes including mediation, fact-finding, and early neutral evaluation. <i>Prerequisites: JUST F302; ENGL F211X or ENGL F213X; or permission of the instructor.</i> (3+0)	
COMM F360 3 Credits	<b>Introduction to Public Relations</b> Offered Fall	COMM F453 3 Credits	<b>Clinic in Mediation, Conferencing and Circle Practices (s)</b>
Introduction to the theories, practices, principles and history of public relations. <i>COMM F131X or COMM F141X or permission of instructor</i> (3+0)		This course engages students in both theory and practice in mediation, conferencing and circle practices. The course emphasizes training and professional practice in a series of theory-to-practice applications. Students work through a series of cases in which they are encouraged to solve ethical dilemmas and conduct issues. In this course, students gain mediation practice skills and integral approached to mediation. <i>Prerequisites: JUST F302; ENGL F211X or ENGL F213X; or permission of the instructor.</i> (3+0)	
COMM F361 3 Credits	<b>Public Relations Campaigns</b> Offered Spring	COMM F462 W 3 Credits	<b>Communication in Health Contexts (s)</b>
This course focuses on the application of public relations principles and practices, which is the research, planning and execution of the public relations campaign. It includes public relations writing for news releases and press kits, radio, television, and cable production, web and new technologies production, writing for newsletters and magazines and brochures and direct mail production. Students will learn how to create and execute effective public relations techniques. <i>Prerequisites: COMM F360; or ABUS F263.</i> (3+0)		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. <i>Prerequisites: Any F300-level communication course; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.</i> (3+0)	
COMM F380 3 Credits	<b>Communication and Diversity (s)</b> Offered Spring	COMM F469 1-3 Credits	<b>Communication Internship</b> Offered As Demand Warrants
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)		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. <i>Prerequisites: Junior or senior standing; permission of instructor.</i> (0+0+10-30)	
COMM F401 3 Credits	<b>Communication Research Methods (s)</b> Offered Fall	COMM F470 3 Credits	<b>Communication Internship Seminar</b> Offered As Demand Warrants
Quantitative research methodologies employed in the conduct of research on communication phenomena. <i>Prerequisites: Any F300-level communication course; senior standing; or permission of instructor.</i> (3+0)		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	
COMM F425 W 3 Credits	<b>Communication Theory (s)</b> 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. <i>Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; any F300-level communication courses; senior standing; or permission of instructor.</i> (3+0)			
COMM F432 O 3 Credits	<b>Professional Public Speaking</b>		
Professional clear effective speaking. Uses evaluation criteria and assignments to build speaking competencies. Professional preparation for students whose career path includes public speaking. <i>Prerequisites: COMM F131X or COMM F141X; senior standing.</i> (3+0)			

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(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: 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 F480 Organizational Communication: Performance Management

#### 3 Credits Offered Fall Even-numbered Years

A comprehensive introduction to the role of communication in organizational change and development using Performance Management (PM) principles and practices. Ethical responsibility of PM communicators will be considered. *Prerequisite: Any F300-level communication course 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 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)

### 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. in 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)

**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 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 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,

## COMMUNITY HEALTH (CHP) — COMPUTER AND INFORMATION TECHNOLOGY SYSTEMS (CITS)

CHP 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 an 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. Special fees apply. **Recommended: CIOS F150 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. Special fees apply. **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. Course covers objectives defined for CompTIA A+ certification. Special fees apply. **Recommended: CIOS F150 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. Course covers objectives defined for CompTIA Network+ certification. Special fees apply. **Recommended: CITS F203 (may be taken concurrently) 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. Special fees apply. **Prerequisites: Math placement at the 100-level or instructor approval.** (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. Course covers foundation server operating system knowledge required for Microsoft Certified Technology Specialist (MCTS) certification exams related to server technologies. Special fees apply. **Prerequisite: CITS F204 (may be taken concurrently) 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. Special fees apply. Special fees apply. **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. Special fees apply. **Recommended: CIOS F150 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. Special fees apply. **Recommended: CIOS F150; or equivalent skills.** (3+0)

**CITS F222**                      **Website Design**  
**1-3 Credits**                      Offered As Demand Warrants  
Comprehensive survey of professional website design and authoring tools used to create Internet websites. Topics include: website design and planning; HTML, XHTML and CSS. Special fees apply. **Recommended: CIOS F150 or equivalent skills.** (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. Special fees apply. **Prerequisite:** CITS F205 or CS F103; CITS F222; or equivalent skills. (3+0)

**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, create and access files on the fly and reduce repetitive maintenance. Course topics include CSS, SSI, DHTML, SQL, PHP and other web technologies. Special fees apply. **Prerequisites:** CITS F205 or CS F103; 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, CSS, XML, Ajax, Web APIs, client-side and server-side programming, graphics and multimedia, and web communication tools. Special fees apply. **Prerequisites:** CITS F221; F222; F224; F225; or equivalent skills. (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, security and network management services. Develop a conceptual understanding of each network service and learn how to plan, implement and administer each service. Course covers system and network services objectives required for Microsoft Certified Technology Specialist (MCTS) certification exams related to server technologies. Special fees apply. **Prerequisites:** CITS F212 (may be taken concurrently) or equivalent skills. (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. This course is the second of four courses that cover objectives required for the Cisco Certified Networking Associate (CCNA) certification. Special fees apply. **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. This course is the third of four courses that cover objectives required for the Cisco Certified Networking Associate (CCNA) certification. Special fees apply. **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. This course is the fourth of four courses that cover objectives required for the Cisco Certified Networking Associate (CCNA) certification. Special fees apply. **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 F204 or equivalent skills. (1-4+0)

**CITS F261 Computer and Network Security**  
3 Credits Offered As Demand Warrants

The fundamental concepts of computer and network security. Course topics include: understanding threats to a computing infrastructure, understanding encryption technologies, securing network communications and applications, security policies and responding to incidents. Course covers objectives defined for CompTIA Security+ certification. Special fees apply. **Prerequisites:** CITS F204 or equivalent skills. (3+0)

**CITS F262 Cybersecurity Defense and Countermeasures**  
3 Credits

This course focuses on network and information systems security from a defensive point of view. Students will learn how to analyze internal and external security threats, develop security policies, and implement security measures to protect information within an enterprise. Topics include risk assessment, security policies and procedures, incident response, cryptographic services, network and host-based security. Special fees apply. **Prerequisites:** CITS F261 or equivalent skills. (3+0)

**CITS F263 Network Security Penetration Testing**  
3 Credits Offered As Demand Warrants

This course focuses on network and information systems security from an offensive point of view. Students will learn technical testing and examination techniques used to identify, validate and assess technical vulnerabilities within an enterprise. Topics include penetration testing methodology, footprinting and reconnaissance, scanning and enumeration, vulnerability validation, data collection and reporting. Special fees apply. **Prerequisites:** CITS F261 or equivalent skills. (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 play 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. Course covers directory services administration objectives required for Microsoft Certified Technology Specialist (MCTS) certification exams related to server technologies. Special fees apply. **Prerequisite:** CITS F212 (may be taken concurrently) or equivalent skills. (3+0)

**CITS F281 Professional Practices in IT**  
1-3 Credits Offered As Demand Warrants

Prepares students for work as an IT professional. Topics include: providing computer technical support, user support management, soft skills in IT, resume writing and career exploration, diagnosing problems, researching and documenting solutions, meeting user needs, developing training materials and giving workshops and lessons. Special fees apply. **Prerequisites:** 24 credits in CITS courses or permission of instructor. (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. Special fees apply. **Prerequisites:** CITS F203; CITS F204 or equivalent skills. (1-3+0)

## COMPUTER AND INFORMATION TECHNOLOGY SYSTEMS (CITS) — COMPUTER INFORMATION AND OFFICE SYSTEMS (CIOS)

**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. Special fees apply. *Prerequisites: 12 credits in CITS courses or 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. Special fees apply. *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. Special fees apply. (1-3+0)

**CITS F289**      **Information Technology: Topics**  
1-3 Credits      Offered As Demand Warrants  
Comprehensive coverage of a specific information technology topic. Special fees apply. *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)

**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**      **Microcomputer Operating Systems**  
3 Credits      Offered As Demand Warrants  
Introduces students to the use and configuration of a current microcomputer operating system. Topics include: basic use, configuration, troubleshooting and maintenance, connecting to the Internet and security basics and safe computing practices. *Prerequisites: Recommended: CIOS F150 or equivalent skills.* (3+0)

**CIOS F130**      **Microcomputer Word Processing**  
1-3 Credits      Offered As Demand Warrants  
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 skills.* (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. *Recommended: CIOS F150 or equivalent skills.* (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. *Recommended: CIOS F150 or equivalent skills.* (1-3+0)

**CIOS F150**      **Computer Business Applications**  
1-3 Credits      Offered As Demand Warrants  
Designed to develop computer literacy in the use and understanding of computer systems, office productivity applications and the Internet. Topics include operating system fundamentals, file management, word processing and spreadsheet fundamentals and safe, secure and effective use of Internet technologies. (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 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 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      Offered As Demand Warrants  
Publication design and layout using desktop publishing software. Includes integrating text and graphics, page layout design, scanning and basic image editing. *Recommended: CIOS F150 or equivalent skills.* (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. *Recommended: CIOS F135 or equivalent skills.* (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. *Recommended: CIOS F150 or equivalent skills.* (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. *Recommended: CIOS F150 or equivalent skills.* (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. *Recommended: CIOS F150 or equivalent skills.* (1-3+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)

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## 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. *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 eLearning & Distance Education. *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; 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 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 F252X; 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)

**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 F371**      **Computer Ethics and Technical Communication**  
**3 Credits**      Offered Fall  
 This course explores the social, legal and ethical issues aggravated, transformed or created by computer technology. Additional focus is on technical communication skills needed in the computer industry. *Prerequisites: ENGL F211X or ENGL F213X; COMM F131X or COMM F141X; CS F202.* (3+0)

**CS F372**      **Software Construction**  
**3 Credits**      Offered Spring  
 Methods for programming and construction of complete computer applications, including refractoring, performance measurement, process documentation, unit testing, version control, integrated development environments, debugging and debuggers, interpreting requirements, and design patterns. *Prerequisites: CS F311.* (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 F253X or MATH F314.* (3+0)

**CS F405**      **Introduction to Artificial Intelligence (m)**  
**3 Credits**      Offered Spring Even-numbered Years  
 Examine diverse branches of AI placing AI 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,

## COMPUTER SCIENCE (CS)

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**                    **Senior Capstone I (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 F314 or CS F371.* (3+0)

**CS F472 W,O**                    **Senior Capstone II**  
**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.* (3+0)

**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**                    **Graphics Rendering (m)**  
**3 Credits**                    Offered Spring Even-numbered Years

High-quality rendering techniques used in computer graphics: raytracing, shadows, antialiasing, volume rendering, radiometry and radiosity. Also topics such as particle systems, shading, image processing, computer aided design, video effects, animation and virtual environments. *Prerequisites: CS F381.* (3+0)

**CS F482**                    **Simulations in Computer Graphics**  
**3 Credits**                    Offered Spring Odd-numbered Years

Software to simulate physical phenomena for use in interactive visualization, such as particle systems, Navier-Stokes fluid dynamics, and finite element solid mechanics. Includes Lagrangian and Eulerian meshes, stability, and discretization order. Our focus is high performance qualitatively correct simulations, rather than high-precision solutions. *Prerequisites: CS F381 and PHYS F212X.* (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 F600**                    **Professional Software Development**  
**4 Credits**                    Offered Fall

Participate in a group project to explore the technical, social and ethical aspects of software development. Topics include: requirements engineering, enterprise-level data storage, software architecture, security, software

testing, legal issues, computer ethics, risk management and project management. *Prerequisites: CS F472.* (4+0)

**CS F601 Algorithms, Architecture and Languages**

**4 Credits** Offered Spring

Current research on, and cross-cutting interrelationships between computer algorithms, machine architecture and languages. Covers asymptotic performance analysis including NP-completeness, modern parallel hardware including multicore, and grammars and parsing from regular expressions to BNF. *Prerequisites: CS F331; CS F411; CS F441 or EE F443.* (4+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 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 multi-processor 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. *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 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. *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,

## COMPUTER SCIENCE (CS) — CONSTRUCTION TRADES TECHNOLOGY (CTT)

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)

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## 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 F151X.* (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 F152X.* (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 F152X.* (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)

<p><b>CTT F103</b> <b>1 Credit</b> 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.) <i>Prerequisites: CTT F102 or permission of instructor.</i> (1+1)</p>	<p><b>Introduction to Blueprint Reading</b> Offered As Demand Warrants</p>	<p><b>CTT F114</b> <b>2 Credits</b> 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.) <i>Prerequisites: CTT F113 or permission of instructor.</i> (1+2)</p>	<p><b>Introduction to Concrete Materials and Forms</b> Offered As Demand Warrants</p>
<p><b>CTT F104</b> <b>2 Credits</b> 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.) <i>Prerequisites: CTT F103 or permission of instructor.</i> (2+0)</p>	<p><b>Basic Communication and Employability Skills</b> Offered As Demand Warrants</p>	<p><b>CTT F115</b> <b>12 Credits</b> 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.) <i>Prerequisites: CTT F110 or permission of instructor.</i> (6+12)</p>	<p><b>Residential Carpentry — Level II</b> Offered As Demand Warrants</p>
<p><b>CTT F106</b> <b>3 Credits</b> 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)</p>	<p><b>Construction Mathematics</b> Offered As Demand Warrants</p>	<p><b>CTT F116</b> <b>2 Credits</b> 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.) <i>Prerequisites: CTT F110 or permission of instructor.</i> (1+2)</p>	<p><b>Reading Plans and Site Layout — Level I</b> Offered As Demand Warrants</p>
<p><b>CTT F110</b> <b>8.5 Credits</b> 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.) <i>Prerequisites: CTT F100 or permission of instructor.</i> (5+7)</p>	<p><b>Residential Carpentry — Level I</b> Offered As Demand Warrants</p>	<p><b>CTT F117</b> <b>2 Credits</b> 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.) <i>Prerequisites: CTT F116 or permission instructor approval.</i> (1+2)</p>	<p><b>Exterior Finish and Moisture Protection</b> Offered As Demand Warrants</p>
<p><b>CTT F111</b> <b>2.5 Credits</b> 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.) <i>Prerequisites: CTT F100 or permission of instructor.</i> (2+1)</p>	<p><b>Materials and Tools Used in the Trade</b> Offered As Demand Warrants</p>	<p><b>CTT F118</b> <b>3 Credits</b> 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.) <i>Prerequisites: CTT F117 or permission of instructor.</i> (2+2)</p>	<p><b>Roofing, Stairs and Metal Studs Applications</b> Offered As Demand Warrants</p>
<p><b>CTT F112</b> <b>2 Credits</b> 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.) <i>Prerequisites: CTT F111 or permission of instructor.</i> (1+2)</p>	<p><b>Floor Systems, Wall and Ceiling Framing</b> Offered As Demand Warrants</p>	<p><b>CTT F119</b> <b>5 Credits</b> 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.) <i>Prerequisites: CTT F118 or permission of instructor.</i> (2+6)</p>	<p><b>Drywall and Interior Finish Applications</b> Offered As Demand Warrants</p>
<p><b>CTT F113</b> <b>2 Credits</b> 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.) <i>Prerequisites: CTT F112 or permission of instructor.</i> (1+2)</p>	<p><b>Roof Framing, Windows and Exterior Doors</b> Offered As Demand Warrants</p>	<p><b>CTT F121</b> <b>2 Credits</b> Journey persons 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. <i>Prerequisites: Skilled journey person in specific skill area or permission of instructor.</i> (2+0)</p>	<p><b>Train the Trainer</b></p>
<p><b>CTT F130</b> <b>1 Credit</b> 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. (0.5+1)</p>	<p><b>Introduction to Facilities Maintenance</b> Offered As Demand Warrants</p>		

## CONSTRUCTION TRADES TECHNOLOGY (CTT)

### 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. (0.5+1)

### 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. (0.5+1)

### 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. (1+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. (0.5+1)

### 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 hydronic principals and Alaska code. (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. (2+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.* (2+0)

### CTT F138 Residential Heating Controls

**2 Credits**  
Offered As Demand Warrants  
Provides conceptual and practical applications for students wishing to become a residential heating control 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 and electronic circuits used to control residential heating 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 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 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 and CTT F100 or permission of 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 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)

**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 F240**            **Introduction to Project Development for Tribal Residential Construction**  
**3 Credits**            Offered As Demand Warrants  
This course introduces the roles and responsibilities of project managers who manage and supervise the construction of housing projects in rural Alaska. Because they are funded predominantly by the U.S. Department of Housing and Urban Development (HUD) through the Native American Housing Assistance and Self-Determination Act (NAHASDA), projects conducted by rural housing authorities and tribal organizations have unique planning and administrative requirements. Project managers working in rural Alaska also require specialized training due to complicating factors such as problematic soil conditions, materials availability, transportation and other logistical challenges, and variable workforce capacity. Students will gain skills in developing plans and specifications for rural construction projects, ensure building codes are met during project development, and learn processes and materials unique to isolated locations with limited services. *Prerequisites: CIOF F150, CTT F106, Certificate in Construction Trades Technology or permission of instructor.* (3+0)

**CTT F241**            **Introduction to Estimating, Cost Control, and Quality Control for Tribal Residential Construction**  
**3 Credits**            Offered As Demand Warrants  
This course builds upon the skills obtained in CTT F240 by introducing the roles and responsibilities of project managers relative to project scheduling, estimating, cost control and quality control. Because they are funded predominately by the U.S. Department of Housing and Urban Development (HUD) through the Native American Housing Assistance and Self-Determination Act (NAHASDA), projects conducted by rural housing authorities and tribal organizations have unique planning and administrative requirements. Students will learn to use project scheduling and cost control tools which incorporate these requirements and that have been developed for and proven effective in the management of residential construction projects in rural Alaska. Complicating factors for rural Alaska projects such as materials availability, transportation and other logistical challenges, variable workforce capacity, and complex political environment as they relate to project estimating, cost control and quality assurance will also be discussed. *Prerequisites: CTT F240, Certificate in Construction Trades Technology or permission of instructor.* (3+0)

**CTT F250**            **Current Topics in Construction Trades**  
**1-3 Credits**            Offered As Demand Warrants  
Various topics of current interest in the Construction Trades. Topics announced prior to each semester. Course may be repeated for credit. *Prerequisites: CTT F100. Recommended: CTT F106.* (1-3+0.5-1.5)

**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 School Counseling Certification 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 School Counseling Certification program or permission of instructor.* Cross-listed with PSY F660. (3+2)

**COUN F627**            **Developmental Interventions**  
**3 Credits**            Offered Spring  
Designed to give students an opportunity for limited practice in applying developmental theory to work with children and youth. Attention is placed on assisting children and youth to accomplish developmental tasks appropriate to their psychological growth. *Prerequisites: COUN F623; admittance to the Counseling program; or permission of instructor.* (3+0)

**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 School Counseling Certification program; or permission of instructor.* (3+0)

**COUN F629**            **Counseling Interventions for Adults**  
**3 Credits**            Offered Spring  
Examines various intervention strategies for working primarily with adult individuals in a variety of situations. Attention is placed on assisting adults in accomplishing developmental tasks appropriate to their psychosocial growth. Descriptive intervention techniques with respect to assessing individuals in crisis will be discussed and strategies for handling those crises situations will be examined. *Prerequisites: COUN F623; admittance to the Counseling program or School Counseling Certification program; or permission of instructor.* (3+0)

**COUN F630**            **Appraisal for Counselors**  
**3 Credits**            Offered Fall and Spring  
Introduction to the kinds of assessment information school and community counselors utilize in the assessment process. *Prerequisites: COUN F623;*

## COUNSELING (COUN)

*admittance to Counseling program or School Counseling Certification program; or permission of instructor.* (3+0)

### COUN F632 Career Development 3 Credits Offered Spring; Summer

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 School Counseling Certification program; or permission of instructor.* (3+0)

COUN F634 Practicum in Individual Counseling  
3 Credits Offered Fall; Spring; Summer Even-numbered Years  
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 or School Counseling Certification program; or permission of instructor.* (2+7)

COUN F636 Internship I  
3 Credits Offered Fall; Spring; Summer As Demand Warrants  
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. Special fees apply. *Prerequisites: COUN F634; admittance to Counseling program or School Counseling Certification program; or permission of instructor.* (3+0+20)

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 School Counseling Certification 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; admittance to Counseling program or School Counseling Certification program; or permission of the instructor.* Cross-listed with PSY F646. (3+0)

COUN F647 Professional Ethics  
3 Credits Offered Fall; Spring  
The ethical standards of the American Counseling Association and the American School 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 knowledge of the principles of these ethical codes in practice. *Prerequisites: Admittance to Counseling program or School Counseling Certification program; or permission of instructor.* (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 School Counseling Certification program or permission of the 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 School Counseling Certification 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 School Counseling Certification program; or permission of instructor.* Cross-listed with PSY F666. (3+0)

COUN F667 Ethnicity and Family Studies  
3 Credits Offered Spring  
This course is designed to focus on the contribution of ethnic background to family makeup and functioning. Major ethnic groups are studied along with the counseling, social justice, and advocacy approaches appropriate to each. In a similar fashion, the overarching cultural context of relationships, including factors such as age, gender, sexual orientation, religious and spiritual values, mental and physical characteristics, education, family values, socioeconomic status, and within group as well as between as between group cultural differences are examined. Theories of multicultural counseling, and systems-oriented intervention strategies (couple, family, group, and community) are considered. Counselor cultural self-awareness and the role of counseling in eliminating biases, prejudice, oppression, and discrimination are emphasized. *Prerequisites: COUN F666 or permission of instructor.* (3+0)

COUN F674 Group Counseling  
3 Credits Offered Summer Even-numbered Years  
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; or School Counseling Certification program; or permission of instructor.* Cross-listed with PSY F674. (3+0)

COUN F686 Internship II  
3 Credits Offered Fall; Spring; Summer As Demand Warrants  
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. Special fees apply. *Prerequisites: COUN F634; COUN F636; admittance to Counseling program or School Counseling Certification program; or permission of the instructor.* (3+0+20)

COUN F687 Internship III  
3 Credits Offered Fall; Spring; Summer As Demand Warrants  
The course is designed to give counseling program candidates experience and supervised practice in the broad scope of activities (i.e. record keeping, individual and group counseling, information and referral, consultation, in-service and staff/faculty meetings, supervision) engaged in by either fully credentialed school counselors or licensed professional counselors. Special fees apply. *Prerequisites: COUN F636; admittance to the Counseling program or School Counseling Certification program; or permission of the instructor.* (3+0+20)

COUN F688 Internship IV  
3 Credits Offered As Demand Warrants  
The course is designed to give counseling program candidates experience and supervised practice in the broad scope of activities (i.e. record keeping,

individual and group counseling, information and referral, consultation, in-service and staff/faculty meetings, supervision) engaged in by either fully credentialed school counselors or licensed professional counselors. Special fees apply. *Prerequisites: COUN F687; admittance to the Counseling program or School Counseling Certification program; or permission of instructor.* (3+0+20)

## CROSS-CULTURAL STUDIES

### CCS F418 Cultural Atlases ☼ 3 Credits

The content of the course provides an in-depth look at how teachers can integrate technology and academics with oral traditions and offers a vehicle for helping communities define themselves and their unique cultural identity. Teachers will have an opportunity to guide their students through a positive collaboration with local culture-bearers, community members and educational personnel. The multimedia resources for this course provide numerous examples of cultural atlases and guidance on ways in which the rich oral traditions of Native people can be drawn upon in support of the school curriculum. *Prerequisites: ANTH F242; or permission of instructor.* Cross-listed with ED F419. Stacked with CCS F618; ED F619. (3+0)

### CCS F454 Comparative Farming and Sustainable Food Systems 3 Credits Offered Fall

Principles of food systems geography and food security. Cross-cultural examination of dietary traditions, poverty, hunger, equity and food access and distribution. Comparison of multiple varieties and scales of agricultural systems in the context of social, ecological and economic sustainability. Considers Alaskan and other high-latitude food systems, including country food, wild game harvest and rural to urban nutrition transition. *Junior standing and ENGL F211X or F213X; or permission of instructor.* Cross-listed with NRM F454 and GEOG F454. (3+0)

### 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. Recommended: Graduate-level survey course in research methods 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. 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 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. Cross-listed with ED F616. (3+0)

### CCS F618 Cultural Atlases as a Pedagogical Strategy ☼ 3 Credits

The content of the course provides an in-depth look at how teachers can integrate technology and academics with oral traditions and offers a vehicle for helping communities define themselves and their unique cultural identity. Teachers will have an opportunity to guide their students through a positive collaboration with local culture-bearers, community members and educational personnel. The multimedia resources for this course provide numerous examples of cultural atlases and guidance on ways in which the rich oral traditions of Native people can be drawn upon in support of the school curriculum. *Prerequisites: ANTH F242; or permission of instructor.* Cross-listed with ED F619. Stacked with CCS F418; ED F419. (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 an e-learning/audio-conference course. *Prerequisites: Graduate standing, teaching certificate, or approval of the instructor.* (3+0)

## CROSS-CULTURAL STUDIES (CCS) — CULINARY ARTS AND HOSPITALITY (CAH)

**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. Cross-listed with ED F631. (3+0)

**CCS F656**      **Sustainable Livelihoods and Community Well-Being**  
**3 Credits**      Offered Fall  
Review the basic principles that govern the sustainability of systems and look at the cultural practices and individual behaviors that enhance or degrade sustainable livelihoods and community well-being. Emphasis is on understanding the historical context of ideas about sustainability, on understanding the nature and magnitude of the social, economic and ecological dimensions of contemporary change, and the “best practices” currently in place for communities to respond effectively to change. **Prerequisites:** *Graduate standing or permission of instructor.* Cross-listed with NRM F656 and GEOG F656. (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 AND HOSPITALITY

**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)

**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**  
 Preparing and serving Asian dishes. Study and use of proper cooking methods will be emphasized. Students prepare and enjoy a full meal 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 F180**                    **Artisan Breads**  
**2 Credits**                    Offered Fall  
 Learn the fundamentals of bread making. Take simple ingredients and transform them into handcrafted fresh-baked bread. Learn how to mix, ferment, proof, and bake like a skilled artisan baker. Explore the world of breads starting with crusty French baguettes to sourdough, ciabatta, focaccia, multigrain and much more. Special fees apply. (0.5+3)

**CAH F181**                    **International Breads**  
**2 Credits**                    Offered Fall  
 Take a culinary tour around the world. Visit all the great bread baking countries and experience the diversity each place has to offer. Flaky and buttery croissants and brioche from France, sweet and fruity panettone from Italy, fresh mocha from Japan and much more! *Prerequisite/co-requisite: CAH F101; CAH F140;* (0.5+3)

**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. *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. *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 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, canape', pate', terrines and charcuterie. The student gains practical experience preparing and serving theme buffets for guests. Special fees apply. *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)

**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)

## CULINARY ARTS AND HOSPITALITY (CAH) — DENTAL HYGIENE (DH)

**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 varieties, 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 varieties 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)

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## 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:* DA 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:* DA 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:* DA F251; DA 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:* DA F132; DA F150; DA F152; DA F153; DA F251; DA F252; DA F253; enrollment by special permission only. (1+0+20)

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## 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)

**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 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 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 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 or better.* (2+0+3)

**DH F283**                    **Clinical Practicum II**  
**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 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 or better.* (2+0)

**DH F285**                    **Clinical Practicum III**  
**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 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 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 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 basic work in the process of writing and revising paragraphs and short academic papers. Focus on basic sentence and paragraph structure, revision techniques, and basic critical reading in the academic context. Special fees apply. *Prerequisites: Appropriate placement test scores.* (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 F104**                    **Preparatory College Writing II**  
**3 Credits**  
 Intensive intermediate work in the process of writing and revising short academic papers. Focus on complex sentence and paragraph structure, major revision techniques, and critical reading in the academic context. Preparation for DEVE F109 and ENGL F111X. Special fees apply. *Prerequisites: C or better in DEVE F060; or appropriate placement test scores. Recommended: C or better in DEVS F052.* (3+0)

**DEVE F109**                    **Preparatory College Writing III**  
**3 Credits**  
 Intensive preparatory work in the college writing skills needed for ENGL F111X, including research, writing and revising, and critical reading skills. Special fees apply. *Prerequisites: C or better in DEVE F104; or appropriate placement test scores. Recommended: C or better in DEVS F105.* (3+0)

## DEVELOPMENTAL MATHEMATICS

## 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 F054 Prealgebra

3 Credits

Basic concepts of prealgebra mathematics. Topics include operations and applications of whole numbers, integers, fractions, decimals, ratios and proportions, percents, geometry and measures, evaluation of algebraic expressions and applications. Special fees apply. *Prerequisites: Appropriate placement scores.* (3+0)

## DEVM F055 Elementary Algebra

3 Credits

Topics include evaluation and simplifying algebraic expressions, polynomials, factoring, integer exponents, rational expressions, solutions of linear equations and inequalities, quadratic equations and graphs of lines. Special fees apply. PR# Prerequisites: DEVM F054; ABUS F155; or appropriate placement scores. Prerequisite courses and/or placement exams must be taken within one calendar year prior to commencement of the course. Special fees apply. (3+0)

## DEVM F055D Modularized Mastery Math: Elementary Algebra Module D

1 Credit

This course covers one credit of the DEVM F055 Elementary Algebra course and includes the following topics: simplifying algebraic expressions, solving linear equations in one variable, solving linear and compound inequalities in one variable, applications of linear equations and solving formulas. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting. Special fees apply. *Prerequisites: Grade of B or better in DEVM F054, or ABUS F155; or appropriate placement test scores; permission of instructor required. Prerequisite courses and/or placement exams must be taken within one calendar year.* (1+0)

## DEVM F055E Modularized Mastery Math: Elementary Algebra Module E

1 Credit

This course covers one credit of the DEVM F055 Elementary Algebra course and includes the following topics: linear equations in two variables, graphing linear equations, find the slope of linear equations, writing equations of lines, exponent rules and operations on polynomials. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting. Special fees apply. *Prerequisites: Grade of B or better in DEVM F055D taken within one calendar year; permission of instructor required.* (1+0)

## DEVM F055F Modularized Mastery Math: Elementary Algebra Module F

1 Credit

This course covers one credit of the DEVM F055 Elementary Algebra course and includes the following topics: factoring polynomials, solving quadratic equations by factoring, simplifying rational expressions, operations with rational expressions, complex fractions, solving rational equations and applications of quadratic and rational equations. Topics are

split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting. Special fees apply. *Prerequisites: Grade of B or better in DEVM F055E taken within one calendar year; permission of instructor required.* (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 F054 or DEVM F055.* (1+0)

## DEVM F061 Review of Elementary Algebra

1 Credit

Designed to assist students in reviewing material covered by DEVM F055. Individuals who have not previously taken an elementary algebra course are recommended to enroll in DEVM F055. Available via eLearning & Distance Education 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 F054; 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 F054, DEVM F055, DEVM F062, DEVM F105 and DEVM F105N. 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 F055 or DEVM F105 or DEVM F105N.* (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 eLearning & Distance Education only. (1+0)

## DEVM F105 Intermediate Algebra

3 Credits

Topics include expressions, equations and applications involving linear, quadratic, rational and radical functions; graphs of linear and quadratic

functions; functions and their inverses; introduction to exponential and logarithmic functions; and systems of linear equations. To matriculate to MATH F151X from DEVM F105 a grade of B or higher is required. Special fees apply. *Prerequisites: Grade of C- or better in DEVM F055; 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 F105G      Modularized Mastery Math: Intermediate Algebra Module G**

**1 Credit**

This course covers one credit of the DEVM F105 Intermediate Algebra course and includes the following topics: solving systems of equations and applications, simplifying radicals and expressions with rational exponents, performing operations on radical expressions, solving radical equations and performing operations on complex numbers. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting. Special fees apply. *Prerequisites: Grade of B or better in DEVM F055 or DEVM F069 or appropriate placement test scores; permission of instructor required. Prerequisite courses and/or placement exams must be taken.* (1+0)

**DEVM F105H      Modularized Mastery Math: Intermediate Algebra Module H**

**1 Credit**

This course covers one credit of the DEVM F105 Intermediate Algebra course and includes the following topics: review of solving quadratic equations by factoring, solving quadratic equations that are not factorable, relations and functions, graphs and transformations of functions, quadratic functions and their graphs, performing operations on functions, compositions of functions and applications of quadratic equations and functions. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting. Special fees apply. *Prerequisites: Grade of B or better in DEVM F105G taken within one calendar year; permission of instructor is required.* (1+0)

**DEVM F105J      Modularized Mastery Math: Intermediate Algebra Module J**

**1 Credit**

This course covers one credit of the DEVM Intermediate Algebra course and includes the following topics: solving absolute value equations and inequalities, solving linear and compound linear inequalities, solving quadratic and rational inequalities, inverse functions, exponential and logarithmic functions, properties of logarithms and solving exponential and logarithmic equations. Topics are split into mini-modules and worked until mastery is achieved. Some mini-modules may be skipped if a student already demonstrates mastery of them. Computers will be used within a structured and independent learning setting. Special fees apply. *Prerequisites: Grade of B or better in DEVM F105H taken within one calendar year; permission of instructor required.* (1+0)

**DEVM F105N      Intensive Intermediate Algebra**  
**4 Credits**

Includes exponents, radicals, graphing, systems of equations, quadratic equations and inequalities, logarithms and exponentials and complex numbers using alternative teaching styles. Special fees apply. *Prerequisites: DEVM F055; or DEVM F055F; or DEVM F062; or DEVM F105; or DEVM F105J; or appropriate placement scores. Prerequisite courses and/or placement exams must be taken within one academic 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. Special fees apply. *Prerequisites: Appropriate placement test scores.* (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 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, including combinations of reading, writing and oral communication as required for degree content purposes for certificate degree programs. May link with selected lecture and/or discussion courses. May be repeated for credit when content varies. Note: Does not meet prerequisite requirements for ENGL F111X without further placement testing. *Recommended: Placement into DEVE F104/DEVS F105.* (1-3+0)

**DEVS F105      Academic Reading for College**  
**3 Credits**

Strengthens academic and critical reading and literacy skills required for college-level courses. Emphasizes practice and transfer of reading and study skills that increase comprehension and retention of narrative and expository materials typically encountered in college courses, e.g. textbooks, websites, research articles, etc. Special fees apply. *Prerequisites: C or better in DEVE F060/DEVS F052 or appropriate placement test scores.* (3+0)

## DEVELOPMENTAL STUDIES (DEVS) — DIESEL TECHNOLOGY (DSLТ)

**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 F114**      **Reading in the Humanities/Social Sciences**  
**1 Credit**      Offered Fall  
Introduction and application of effective reading strategies for increased comprehension and retention of course content delivered via written formats, e.g., textbooks, articles, web pages, etc. Graded Pass/Fail. *Co-requisite: Core humanities/social science course.* (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)

**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

**DSLТ F101**      **Safety Including Rigging and Lifting**  
**1 Credit**      Offered Fall  
Materials covered will be the importance of and proper use of 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)

**DSLТ 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)

**DSLТ 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: DSLТ F101; DSLТ F103.* (1.5+3)

**DSLТ 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)

**DSLТ F110**      **Basic Industrial Fabrication**  
**2 Credits**      Offered Fall  
Students will learn the concepts of industrial fabrication. When working with heavy equipment, things can break. This class will teach the basics of how to fabricate and repair heavy equipment in and out of the field using various techniques. Special fees apply. *Prerequisite: Department or Instructor approval required.* (1+2)

**DSLТ F111**      **Diesel Emissions**  
**2 Credits**      Offered Spring  
Students will learn the concepts of diesel engine emissions and how diesel emissions significantly contribute to air pollution. Knowledge of how to create cleaner running diesel engines, promote pollution-control technology, prevent unnecessary idling, and ultimately, make that puff of smoke that can come from these engines an image of the past. We will study and practice the actions taken to reduce diesel emissions using measuring devices, learn the terms and technologies of catalytic converters, particulate filters, the use diesel exhaust fluid, and be able to troubleshoot emission components. Special fees apply. *Prerequisite: Department or Instructor approval required.* (1+2)

**DSLТ 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: DSLТ F101; DSLТ F103.* (1.5+3)

**DSLТ 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 F210 Heavy Equipment Fabrication**  
2 Credits Offered Spring

Students will learn advanced concepts of industrial fabrication in the maintenance of heavy duty equipment, develop a strong understanding of metals and their applications, and have the ability to bend, heat, and apply welding techniques that will support heavy duty equipment for long term use. Special fees apply. *Prerequisite: Department or Instructor approval is required.* (1+2)

**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)

**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 eLearning & Distance Education. (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. (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 enrolled as a CE Major or permission of the program coordinator.* (2+2)

## DRAFTING TECHNOLOGY (DRT) — EARLY CHILDHOOD EDUCATION (ECE)

**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.* (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)

**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. (2.5+1)

**ECE F111**            **Nutrition for Young Children**  
**1 Credit**  
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**  
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. (1+0)

**ECE F113**            **Safe Environments for Young Children**  
**1 Credit**  
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. (1+0)

**ECE F114**            **Learning Environments**  
**1 Credit**  
Space, relationships, materials and routines as resources for constructing interesting, secure and enjoyable environments that encourage play, exploration and learning. (1+0)

**ECE F115**            **Responsive and Reflective Teaching**  
**3 Credits**  
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 is comparable to ECE F170. Students should take either ECE F115 or ECE F170 to meet the practicum and reflection requirement for the Certificate and A.A.S. degree. *Prerequisites:* **ECE F101; placement in ENGL F111X or higher; or permission of program head.** *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 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 F121 Physical Activities for Young Children**  
**1 Credit**  
 Essentials of creating an environment which provides space, materials, equipment and activities to promote the physical development of children. (1+0)

**ECE F122 Cognitive Activities for Young Children**  
**1 Credit**  
 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. (1+0)

**ECE F123 Language and Literature Activities for Young Children**  
**1 Credit**  
 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. (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. (1+0)

**ECE F125 Math Activities**  
**1 Credit**  
 Overview of how children construct mathematical meanings. Introduction to mathematical learning principles and experiences for children, 3-8 years. (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)

**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. *Prerequisite: Placement in ENGL F111X or higher.* (2+2)

**ECE F130 Culture, Learning and the Young Child**  
**2 Credits**  
 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**  
 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. (0.75+0.5)

**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. (2.5+1)

**ECE F141 Class Management**  
**1 Credit**  
 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. (1+0)

**ECE F142 Social Development of the Young Child**  
**1 Credit**  
 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. (1+0)

**ECE F143 Developing Positive Self-Concepts in Young Children**  
**1 Credit**  
 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. (1+0)

**ECE F170 Practicum I**  
**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. *Prerequisites: ECE F101; ECE F104; ECE F107; ECE F110, ECE F119; ECE F140; ECE F213; ECE F229.* (0.5+0+14)

**ECE F171 Program Management**  
**1 Credit**  
 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. (1+0)

**ECE F172 Professionalism**  
**1 Credit**  
 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. (1+0)

**ECE F173 Reflective Teaching**  
**1 Credit**  
 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. *Prerequisites: ECE F101; ECE F104; ECE F107; ECE F110; ECE F119; ECE F140; ECE F213; ECE F229.* (0+3.5)

**ECE F210 Child Guidance**  
**3 Credits**  
 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.

## EARLY CHILDHOOD EDUCATION (ECE)

*Prerequisites: Placement in ENGL F111X or higher or; permission of the program head.* (3+0)

### ECE F213 Curriculum: 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; ECE F107; ECE F119.* (2.5+1)

### ECE F214 Infants 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 program head.* (2.5+1)

### ECE F229 Foundations in Nutrition and Physical Wellness 3 Credits

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 F230 Introduction to Children with Special Needs 3 Credits

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 program head.* (3+0)

### ECE F235 Screening, Assessment and Recording 2 Credits

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 program head. Recommended: ECE F105 or ECE F119.* (2+0)

### ECE F240 Inclusion of Children with Special Needs (s) 3 Credits

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 F104 or ECE F107; placement in ENGL F111X or higher; or permission of the program head.* (3+0)

### ECE F242 Child and Family Ecology 3 Credits

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 program head.* (2.5+1)

### 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+15)

### 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 as Demand Warrants  
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: ENGL F211X or ENGL F213X.* (3+0)

### 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 F304 W Attachment and Social Development (s) 3 Credits

Offered Fall or As Demand Warrants  
Principles and practices in understanding and supporting attachment and social development in conjunction to reciprocal communication streams and social interactions. Strategies for working with families as a continuum for each specific child's development. *Prerequisites: ENGL F111X, ENGL F211X or ENGL F213X. Recommended: ECE F104 or ECE F110 or ECE F45 or ED F245 or PSY F245 or other early development course.* (3+0)

### ECE F305 Social Emotional Development: Reflection and Practice 3 Credits

Offered Fall; As Demand Warrants  
Examination of the many ways teachers can help young children with their social development by addressing the common problems and situations that arise in teaching all children between the ages of 3 and 6 years. Development of strategies to improve teacher practices that will support social and emotional competence. *Prerequisites: ENGL F211X or ENGL F213X.* (3+0)

### ECE F306 W Building Bridges to Support Family Mental Health 3 Credits

Offered Spring or As Demand Warrants  
Understanding and providing assistance to families who live in environments with multi-risk factors requires professionals working together to provide the best possible interventions. Demonstration and examples of strategies that help multi-risk families that assists in bringing together the most effective intervention techniques from a variety of theoretical approaches, parenting strategies and innovative programs. *Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X.* (3+0)

<b>ECE F310</b> <b>3 Credits</b>	<b>Constructivist Curriculum</b> Offered Fall	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. <i>Prerequisite: ENGL F211X or ENGL F213X. Recommended: ECE F104, or ECE/PSY/ED F245, ECE F130, ECE F342.</i> (3+0)
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. <i>Prerequisites: ENGL F211X or ENGL F213X.</i> (3+0)		
<b>ECE F320</b> <b>3 Credits</b>	<b>Environment and Curriculum for Infants and Toddlers</b> Offered Fall	<b>ECE F410</b> <b>3 Credits</b> Offered Fall
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. <i>Prerequisites: ENGL F211X or ENGL F213X.</i> (2.5+0+1.5)		Focus on policies, leadership and professional practices inherent of successful relationships with parents. Consideration of individual communication styles and cultural diversity emphasized in relation to best mentoring practices. <i>Prerequisites: ECE F242; ENGL F211X or ENGL F213X.</i> (3+0)
<b>ECE F340</b> <b>3 Credits</b>	<b>Financial Management of Early Childhood Programs</b> Offered Fall Odd-numbered Years	<b>ECE F420 W</b> <b>3 Credits</b> Offered Fall
The financial aspects of managing a child 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. <i>Prerequisites: ENGL F211X or ENGL F213X or equivalent.</i> (3+0)		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. <i>Prerequisites: ECE F310; ECE F360; ENGL F111X; ENGL F211X or ENGL F213X; upper-division standing; or permission of instructor.</i> (3+0)
<b>ECE F341 W</b> <b>3 Credits</b>	<b>Personnel Management of Early Childhood Programs</b> Offered As Demand Warrants	<b>ECE F421</b> <b>3 Credits</b> Offered Spring As Demand Warrants
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. <i>Prerequisites: ENGL F211X or ENGL F213X.</i> (3+0)		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. <i>Prerequisite: ECE F220; ENGL F111X; ENGL F211X or ENGL F213X.</i> (2.5+0+1.5)
<b>ECE F342 O</b> <b>3 Credits</b>	<b>Family Relationships</b> Offered Fall	<b>ECE F430</b> <b>3 Credits</b> Offered Spring
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. <i>Prerequisites: COMM F131X or COMM F141X; upper-division standing; or permission of instructor.</i> (3+0)		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. <i>Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; ECE F240; ECE F310.</i> (2.5+0+1.5)
<b>ECE F350</b> <b>3 Credits</b>	<b>Play: Foundation for Development (s)</b> Offered As Demand Warrants	<b>ECE F440</b> <b>3 Credits</b> Offered Fall Odd-numbered Years
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. <i>Prerequisites: ENGL F211X or F213X; ECE F107; ECE F245; or approved development class.</i> (3+0)		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. <i>Prerequisites: ECE F310; ECE F360; upper-division standing. Recommended: Completion of at least one natural science course.</i> (2.5+1)
<b>ECE F360</b> <b>3 Credits</b>	<b>Assessment in Early Childhood</b> Offered Spring	<b>ECE F442</b> <b>3 Credits</b> Offered Fall As Demand Warrants
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. <i>Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X.</i> (3+0)		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. <i>Prerequisites: ECE F242; ENGL F111X; ENGL F211X or ENGL F213X.</i> (3+0)
<b>ECE F405</b> <b>3 Credits</b>	<b>Seminar in Culture and Child Rearing Practices</b> Offered As Demand Warrants	<b>ECE F445 W</b> <b>3 Credits</b> Offered Spring Odd-numbered Years
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		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. <i>Prerequisites: ECE F107 or ED F245 or PSY F245; ENGL F111X; ENGL F211X or ENGL F213X.</i> (2.5+0+1.5)

## EARLY CHILDHOOD EDUCATION (ECE) — ECONOMICS (ECON)

**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)

**ECE F471**      **Clinical Practice: Organizational Action Research**  
**3 Credits**      Offered Spring Odd-numbered Years or As Demand Warrants  
Theory and application of action research within an organization. Emphasis on use of personal reflection to understand practice and the development of a planned theory of action. Techniques for observing action through the use of examining the evidence are learned. Students should expect to be involved within an early childhood administrative setting for some or all of the day for a minimum of 10 weeks. *Prerequisites: ENGL F211X or ENGL F213X; completion of all CDFS core major and Administration or Family Support concentration course work.* (1+0+14)

**ECE F472**      **Clinical Practice: Classroom Research**  
**3 Credits**      Offered Spring or As Demand Warrants  
Theory and application of classroom research with emphasis on teacher as researcher. Techniques of classroom research will be studied and applied; including observation, question posing, note taking, data analysis, data interpretation, practica, and research report writing. Students should expect to be involved in the classroom setting for some or all of the school day for the entire university semester; approximately 200 hours. *Prerequisites: ENGL F211X or ENGL F213X; completion of all CDFS core major and concentration course work, excluding ECE F473.* (1+0+14)

**ECE F473**      **Clinical Practice: Classroom Management**  
**3 Credits**      Offered Spring or As Demand Warrants  
Supervised clinical field practice within an early childhood setting. Intent of this course is to provide a capstone for students who have completed all course work within the Curriculum and Teaching or Infant and Toddler concentration of the Child Development and Family Studies B.A. program. Practica activity will demonstrate application of appropriate curriculum, assessment and classroom environments developed to enhance the learning and development of young children. *Prerequisites: ENGL F211X or ENGL F213X; completion of all CDFS core major and concentration course work, excluding ECE F472. This course may be taken in conjunction with ECE F480.* (1+0+14)

**ECE F480**      **Child Development and Family Studies Portfolio**  
**1 Credit**      Offered Fall and Spring As Demand Warrants  
Entry into development of a capstone project that documents the graduating candidate's professional development as a result of the Child Development and Family Studies program within the standards set by the National Association for the Education of Young Children. The portfolio is required for final completion of the CDFS B.A. degree program in lieu of a written comprehensive exam or thesis. This course introduces students to the portfolio process, which will be completed with final assessment as the finishing piece of the CDFS program. Graded Pass/Fail. *Prerequisites: ENGL F211X or ENGL F213X; admittance to the CDFS B.A. program.* (0.5+0+1)

## ECONOMICS

Students enrolling in School of Management courses are expected to have completed the necessary prerequisites for each course.

A per-semester computing facility user fee will be assessed for students enrolling in one or more School of Management courses (ACCT, AIS, BA, ECON, HSEM, LEAD, or MBA) excluding ECON F100X. This fee is in addition to any material fees.

**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. *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 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**      **Introductory Statistics for Economics and Business**  
**3 Credits**  
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; 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. (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. Special fees apply. *Prerequisites: ECON F201; ECON F202; MATH F222X or equivalent.* (3+0)

**ECON F322**      **Managerial Economics**  
**3 Credits**  
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. Special fees apply. *Prerequisites: ECON F201; ECON F202; MATH F222X or equivalent.* (3+0)

**ECON F324**      **Intermediate Macroeconomics (s)**  
**3 Credits**  
Concepts and measurement of income, analysis of aggregate demand and supply and their relation to the level of prices, employment and economic growth. Special fees apply. *Prerequisites: ECON F201; ECON F202; MATH F222X or equivalent.* (3+0)

<b>ECON F327</b>	<b>Intermediate Econometrics for Forecasting and Business</b>	public policy plays in influencing the rate at which energy resources are used over time. Special fees apply. <i>Prerequisites: ECON F201 and ECON F202, or ECON F235; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.</i> Stacked with ECON F639. (3+0)
<b>3 Credits</b>	Offered As Demand Warrants	
Extension of topics developed in ECON F227 including methods of empirical analysis in the context of economic analysis and forecasting problems. Development of the science and art of building and using models in the context of economic analysis and forecasting. Understanding the fundamental theory underlying regression methods (including estimation, hypothesis testing, and prediction) and learning how to appropriately apply these techniques in the analysis of economic and business problems. Simple and multiple regression and correlation, analysis of variance, forecasting techniques, quality control, nonparametric methods and decision theory. Special fees apply. <i>STAT F200X and ECON F227 or permission of instructor.</i> (3+0)		
<b>ECON F335 O</b>	<b>Intermediate Natural Resource Economics (s)✳</b>	
<b>3 Credits</b>		
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. Special fees apply. <i>Prerequisites: COMM F131X or COMM F141X; ECON F201; ECON F202, or ECON F235; MATH F222X or equivalent.</i> (3+0)		
<b>ECON F350</b>	<b>Money and Banking (s)</b>	
<b>3 Credits</b>	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. Special fees apply. <i>Prerequisites: ECON F201 and ECON F202.</i> (3+0)		
<b>ECON F351</b>	<b>Public Finance (s)</b>	
<b>3 Credits</b>	Offered Fall	
Economic justifications for government; federal, state and local government, taxation, spending and debt; their effects on allocation, distribution, stabilization and growth. Special fees apply. <i>Prerequisites: ECON F201; ECON F202; MATH F222X or equivalent.</i> (3+0)		
<b>ECON F409 W</b>	<b>Industrial Organization and Public Policy (s)</b>	
<b>3 Credits</b>		
The relationship of market structure to the economic conduct and performance of firms and industries, the determinants, measurement and classification of market structure, public policy toward mergers, industrial and aggregate concentration. Special fees apply. <i>Prerequisites: ECON F201; ECON F202; ENGL F111X; ENGL F211X or F213X; MATH F222X or equivalent; upper division standing; or permission of instructor.</i> (3+0)		
<b>ECON F420 W</b>	<b>Labor Markets and Public Policy (s)</b>	
<b>3 Credits</b>	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. Special fees apply. <i>Prerequisites: ECON F201; ECON F202; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.</i> (3+0)		
<b>ECON F434 W</b>	<b>Environmental Economics ✳</b>	
<b>3 Credits</b>	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. Special fees apply. <i>Prerequisites: ECON F201; ECON F202 or ECON F235; ENGL F111X; ENGL F211X or ENGL F213X; MATH F222X or equivalent; or permission of instructor.</i> (3+0)		
<b>ECON F439 W</b>	<b>Energy Economics (s)✳</b>	
<b>3 Credits</b>	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		
<b>ECON F451 W</b>	<b>Public Expenditure Analysis</b>	
<b>3 Credits</b>	Offered Spring Odd-numbered Years	
Purposes and economic effects of governmental expenditures, budgeting techniques, and their effects on resource allocation. Special fees apply. <i>Prerequisites: ECON F201; ECON F202; ENGL F111X; ENGL F211X or ENGL F213X; MATH F222X or equivalent; or permission of instructor.</i> (3+0)		
<b>ECON F463 W</b>	<b>International Economics (s)✳</b>	
<b>3 Credits</b>		
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. Special fees apply. <i>Prerequisites: ECON F201; ECON F202; ENGL F111X; ENGL F211X or F213X; MATH F222X or equivalent; or permission of instructor.</i> (3+0)		
<b>ECON F601</b>	<b>Microeconomic Theory I</b>	
<b>3 Credits</b>	Offered Fall	
Analysis of consumer and producer theory, price determination and welfare economics. Special fees apply. <i>Prerequisites: ECON F321 or equivalent; MATH F251X or equivalent; graduate standing; or permission of instructor.</i> (3+0)		
<b>ECON F602</b>	<b>Economic Modeling</b>	
<b>3 Credits</b>	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, non-market valuation and environmental economics. Special emphasis will be given to the use of econometric analyses. Special fees apply. <i>Prerequisites: ECON F601; ECON F626 or equivalent; graduate standing; or permission of instructor.</i> (3+0)		
<b>ECON F603</b>	<b>Macroeconomic Theory I</b>	
<b>3 Credits</b>	Offered Spring	
Analysis of the underlying causes of unemployment, economic instability, inflation and economic growth. Special fees apply. <i>Prerequisites: ECON F321 or equivalent; ECON F324 or equivalent; MATH F251X or equivalent; graduate standing; or permission of instructor.</i> (3+0)		
<b>ECON F613</b>	<b>Resilience Internship</b>	
<b>2 Credits</b>	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. Special fees apply. <i>Prerequisites: ANTH/BIOL/ECON/NRM F667; ANTH/BIOL/ECON/NRM F668; or permission of instructor.</i> Cross-listed with ANTH F617; BIOL F613; NRM F613. (2+0)		
<b>ECON F616</b>	<b>Economics Background for Resilience and Adaptation ✳</b>	
<b>1 Credit</b>	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. Special fees apply. <i>Prerequisites: Graduate student enrollment or permission of instructor.</i> (1+0)		

## ECONOMICS (ECON) — EDUCATION (ED)

**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. Special fees apply. *Prerequisites: MATH F251X 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. Special fees apply. *Prerequisites: ECON F227 or equivalent; MATH F251X 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 microeconomic modeling are developed and extended. Univariate and multivariate time series modeling and forecasting is developed. Special fees apply. *Prerequisites: ECON F626 or equivalent; graduate standing; or permission of instructor.* (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. Special fees apply. *Prerequisites: ECON F321; ECON F335 or equivalent; MATH F251X 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. Special fees apply. *Prerequisites: ECON F321; ECON F335 or equivalent; MATH F251X or equivalent; graduate standing; or permission of instructor.* (3+0)

**ECON F637**      **Evolution of Conservation Concepts and Policy**  
**3 Credits**      Offered Fall Even-numbered Years  
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. Special fees apply. *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. Special fees apply. *Prerequisites: ECON F201 and ECON F202, 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, students address the processes that influence ecological, cultural and economic sustainability, with an emphasis on northern examples. Special fees apply. *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. Special fees apply. *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. Special fees apply. *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. Special fees apply. *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. Special fees apply. *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**  
 Introduction to the B.A. in Elementary Education degree along with the resources available through the UAF School of Education. Overview of what it means to be an elementary teacher in Alaska's culturally, linguistically and geographically diverse schools through review of current educational context and various entities that shape educational policy and familiarization with UAF/AK Teacher Standards and assessment. Participation in an elementary classroom is required. 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: Collaborate/ Hangouts**  
**0.5 Credit**  
 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. This module covers the use of Blackboard Collaborate and Google Hangouts for participating in UA course work online. Graded Pass/Fail. (0.5+2)

**ED F237B**                  **Technology Tools for Teachers: Blackboard**  
**0.5 Credit**  
 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. This module covers the use of calendar and discussion board, submitting assignments, and checking grades. Graded Pass/Fail. (0.5+2)

**ED F237C**                  **Technology Tools for Teachers: Google Drive**  
**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. This module covers the use of Google Drives (Google Apps) for word processing, creating presentation, working with spreadsheets/charting, converting documents to Office format, and sharing of documents. Graded Pass/Fail. (0.5+2)

**ED F237D**                  **Technology Tools for Teachers: Office**  
**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. This module covers the basic uses of Microsoft Office (Word, PowerPoint, Excel) for productivity tasks. Graded Pass/Fail. *Prerequisite: Access to MS Office is required.* (0.5+2)

**ED F245**                    **Child Development (s)**  
**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: ENGL F111X 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 F237A; ED F237B; ED F237C; ED F237C 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. Special fees apply. *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)

## EDUCATION (ED)

### 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.* (2.5+0+1.5)

### 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.* (2+0+3)

### ED F414 Art, Music and Drama in Elementary Classrooms

3 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.* (1.5+0+4.5)

### ED F417 Physical and Health Education for Elementary Teachers

3 Credits

Introduction and application of the relationship between physical fitness and good health in a school setting. Includes introducing students to fundamental 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.* (1.5+0+4.5)

### ED F419 Cultural Atlases

3 Credits

The content of the course provides an in-depth look at how teachers can integrate technology and academics with oral traditions and offers a vehicle for helping communities define themselves and their unique cultural identity. Teachers will have an opportunity to guide their students through a positive collaboration with local culture-bearers, community members and educational personnel. The multimedia resources for this course provide numerous examples of cultural atlases and guidance on ways in which the rich oral traditions of Native people can be drawn upon in support of the school curriculum. *Prerequisites: ANTH F242; or permission of instructor.* Cross-listed with CCS F418. Stacked with CCS F618; ED F619. (3+0)

### 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 and Junior standing or permission of instructor.* Cross-listed with ANS F420. Stacked with ED F606. (3+0)

### ED F431 Web 2.0 Fundamentals: Participate, Produce, Publish

3 Credits Offered Fall As Demand Warrants

Examine the impact of Web 2.0, cloud computing and mobile technologies on K-12 education and other social institutions. Establish and publish to frameworks — web-based e-portfolio, personal learning network, blog, podcasts — that will form the core elements of the M.Ed. Instructional Technology Innovation (MITI). This course is a prerequisite for subsequent work toward the MITI and should be taken before or concurrently with ED F432, Fundamentals of Media Design. *Prerequisites: Admission to the Master of Education program or permission of instructor.* (3+0)

### ED F432 Fundamentals of Media Design

3 Credits Offered As Demand Warrants

Create and publish materials with proper media design for use in teaching and learning. Topics include photo and graphics formatting, video production, video podcast production, SMART technologies, static screen capture and motion screen capture. These productions will be included on students' MITI e-portfolios. This course is a prerequisite for subsequent MITI courses and should be taken after or concurrently with ED F431 Web 2.0 Fundamentals: Participate, Produce, Publish. *Prerequisites: Admission to the Master of Education program or permission of instructor.* (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 Music Department and the School of Education. Open only to Music majors seeking K-12 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.* (1.5+0+12)

**ED F467**                    **Synthesizing the Standards I**  
**2 Credits**                    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+8)

**ED F468 O**                **Internship and Student Teaching**  
**4 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.* (2+0+6)

**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.* (1+0+3)

**ED F476**                    **Assessment of Literacy Development**  
**1 Credit**                    Offered Spring  
 Interns will review, evaluate and create assessments to document elementary student literacy development. Interns will analyze results of literacy assessments and develop plans for instruction for each elementary student. Assessments may include teacher-made quizzes or tests, anecdotal records based on observing children, student reading and writing samples, and spelling assessments. Interns will identify important characteristics of each student including, but not limited to, student interests and goals for literacy development. *Prerequisites: Admission to the internship year or permission of the instructor.* (1+0+22)

**ED F478**                    **Math 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 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+8)

## EDUCATION (ED)

**ED F479 Science Methods and Curriculum Development**  
3 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. (2.5+0+4)

**ED F486 W,O 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. *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. Recommended: Graduate-level survey course in research methods or approval of 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 and graduate standing 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. 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. Cross-listed with CCS F616. (3+0)

**ED F619 Cultural Atlases as a Pedagogical Strategy**  
3 Credits  
The content of the course provides an in-depth look at how teachers can integrate technology and academics with oral traditions and offers a vehicle for helping communities define themselves and their unique cultural identity. Teachers will have an opportunity to guide their students through a positive collaboration with local culture-bearers, community members and educational personnel. The multimedia resources for this course provide numerous examples of cultural atlases and guidance on ways in which the rich oral traditions of Native people can be drawn upon in support of the school curriculum. *Prerequisites: ANTH F242; or permission of instructor.* Cross-listed with CCS F619. Stacked with CCS F418; ED F419. (3+0)

**ED F620 Language, Literacy and Learning**  
3 Credits Offered Spring  
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. Special fees apply. *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. 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 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 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 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 F650 Current Topics in Educational Technology: Innovative Instruction and Leadership**

**3 Credits** Offered Fall As Demand Warrants  
This is a content-customized course for students interested in increasing their awareness of the impact of innovative technology in the learning environment. Participants in the class study professional and personal technology based topics relevant to various career fields in education, with an emphasis on current events, emerging technologies and ethical considerations. Readings, research papers and discussions lead to the development of an instructionally oriented technology proposal that includes an implementation plan and formal presentation. (3+0)

**ED F653 Instructional Design**

**3 Credits** Offered Spring As Demand Warrants  
Instructional design combines technology skills with application of learning theory to maximize the effectiveness of education. This course explores instructional design from a practical perspective. Students will acquire hands-on practice with a variety of computer-based tools while exploring instructional methods and principles of design. *Prerequisite: Admission to the Master of Education program or permission of instructor.* (3+0)

**ED F654 Digital Citizenship, Internet Legal Issues, Digital Copyright and Fair Use**

**3 Credits** Offered Fall As Demand Warrants  
An examination of critical elements of digital citizenship, a survey of contemporary legal issues, and an exploration of copyright, fair use, and intellectual property relevant to educators and instructional designers. Also available through eLearning & Distance Education. *Prerequisites: Admission to the Master of Education program or permission of the instructor.* (3+0)

**ED F655 Online Pedagogy**

**3 Credits** Offered Fall As Demand Warrants  
A study of theory, tools and methods for teaching online courses. Topics include prominent learning theories, affordance of new technologies, strategies for assessment and techniques for classroom management in an online environment. Students will develop and articulate a personal philosophy of teaching and learning appropriate for the 21st Century. *Prerequisite: Admission to the Master of Education program or permission of instructor.* (3+0)

## EDUCATION (ED)

### ED F659 **Multimedia Tools for Educators** 3 Credits Offered Fall

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. (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 F676 **Supporting Learning in Diverse Systems** 3 Credits Offered Spring As Demand Warrants

Provides students with the skills necessary to support student learning in a variety of managed and unmanaged computing environments. Students will explore methods of local and remote support, perform tasks to ensure an optimal managed learning environment for students and teachers, and create documentation for student and teacher use. Finally, students will step through the entire process of taking an idea for improving their learning environment by evaluating, implementing and instructing use of a solution of their choice. *Prerequisites: Admission to the Master of Education program or permission of the instructor.* (3+0)

### ED F677 **Digital Storytelling** 3 Credits Offered Spring As Demand Warrants

This course examines the principles of storytelling in general and digital storytelling in particular, paying close attention to the use of digital storytelling to inform, persuade and entertain across a variety of social and cultural institutions. Elements of digital storytelling will be investigated and used to create original digital stories in a variety of media. *Prerequisites: Admission to the Master of Education program or permission of the instructor.* (3+0)

### ED F678 **Mathematics 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 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+8)

### 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 F682 **Rethinking Multicultural Education** 3 Credits Offered Fall

This course focuses on: 1) rethink the concept of multicultural education; 2) critically analyze and reflect on current multicultural education issues at the national, state and local levels; and 3) translate/apply the results of analysis into local classrooms, school districts, communities and beyond. Topics include: children of immigrants, Alaska Native education, culturally relevant education, social justice education and exploring ways to create stronger family-community-school partnerships. *Prerequisite: Graduate standing.* (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** 3 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 the post-baccalaureate elementary licensure program; graduate standing; or permission of instructor.* Stacked with ED F479. (2.5+0+4)

### 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 F110**      **Becoming a Middle/High School Teacher**  
**1 Credit**      Offered Fall and Spring  
 This course familiarizes students with requirements for becoming a middle or high school teacher. Advisors from the School of Education, guest presenters from area school districts address issues pertaining to licensure and teaching. Current issues in secondary teaching are addressed. (1+0)

**EDSC F205**      **Introduction to Secondary Education**  
**3 Credits**      Offered Spring, As Demand Warrants  
 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. Special fees apply. *Prerequisites: ENGL F111X; sophomore standing; or permission of instructor.* (3+0+0.5)

**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 Internship Year 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. Special fees apply. *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 Internship year 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 Internship year 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 Internship year or permission of instructor.* Stacked with EDSC F634. (3+0)

**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 the Internship year 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 Internship year or permission of instructor.* Stacked with EDSC F636. (3+0)

**EDSC F437**      **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 the Internship year or permission of instructor.* (3+0)

**EDSC F442**      **Technology Applications in Education I**  
**1 Credit**      Offered Fall  
 The course focuses on Initial instruction in educational technology and applications as a resource for the delivery of instruction to enhanced student learning. The course is designed to introduce participants to technology tools to create, implement and assess instructional material in a variety of media. Participants will set up 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.

## EDUCATION: SECONDARY (EDSC)

*Prerequisites: Admission to the Internship year or permission of the instructor.* Stacked with EDSC F642. (1+0)

### EDSC F443 Technology Application in Education II 2 Credits Offered Spring

The course is designed to increase participants' use of technology tools to create and implement instructional material in a variety of media to support and assess learning. Participants will develop an 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: Successful completion of EDSC F442 or permission of instructor.* Stacked with EDSC F643. (2+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 Internship year 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 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 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 O Secondary Teaching: School Internship II and Seminar 3-9 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. Credits may be added upon completion of designated special projects developed by students and faculty. The School of Education may limit enrollment, determine assignments and cancel registration of candidates doing unsatisfactory work. Graded Pass/Fail. Special fees apply. *Prerequisites: COMM F131X or F141X; admission to the secondary post-baccalaureate licensure program or permission of instructor.* (1+0+4-16)

### 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 F205 or EDSC F415 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 Internship year 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 Internship year or permission of instructor.* Stacked with EDSC F433. (3+0)

### 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 Internship year 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 Internship year 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 Internship year 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 the Internship year or permission of the instructor.* Stacked with EDSC F437. (3+0)

**EDSC F642**      **Technology Applications in Education I**  
**1 Credit**      Offered Fall

This course focuses on initial instruction in educational technology and applications as a resource for the delivery of instruction to enhance student learning. The course is designed to introduce participants to technology tools to create, implement and assess instructional material in a variety of media. Participants will set up 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 Internship year or permission of instructor.* Stacked with EDSC F442. (1+0)

**EDSC F643**      **Technology Application in Education II**  
**2 Credits**      Offered Spring

This course is designed to increase participants' use of technology tools to create and implement instructional materials in a variety of media to support and assess learning. Participants will develop an electronic portfolio that demonstrates professional development and achievement relative to the ISTE National Standards for Students and Teachers, Alaska Education Standards and integrated with Standards for Culturally Responsive Schools. *Prerequisites: Successful completion of EDSC F642 or permission of the instructor.* Stacked with EDSC F443. (2+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 Internship year 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 to enrollment in this course. Stacked with EDSC F458. (3+0)

## EDUCATION: SPECIAL EDUCATION

**EDSE F316**      **Introduction to Special Education for Elementary Classroom Teachers**  
**3 Credits**      Offered Fall and Spring

The course provides an introduction to special education for students preparing to become an elementary classroom teacher. It provides an in-depth understanding of concepts, strategies and issues identifying and supporting the needs of elementary students who experience disabilities. Course content includes reviews of all categorical disabilities, developmental disabilities, and laws pertinent to elementary-aged children's disabilities. Requires field-work in an elementary special education classroom or an inclusive general elementary classroom. *Prerequisites: ED F201 and Praxis I or permission of the instructor.* (2.5+0+1)

**EDSE F320**      **Adapting and Accommodating Instructions for Students with Disabilities**  
**3 Credits**      Offered Fall and Spring

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 F316, or permission of instructor.* (2.5+0+1)

**EDSE F422**      **Curriculum, Management and Strategies II: High Incidence**  
**3 Credits**

Provides in-depth understanding of best practice strategies for supporting students with high incidence disabilities. A theoretical basis for selecting approaches is presented along with practical strategies of methods of instruction and classroom management for addressing the needs of students. Development, implementation, support and evaluation of Individual Education Program (IEP) plan for students with high incidence disabilities as well as classroom management techniques and plans developed for inclusion of high incidence disabilities in culturally responsive ways. Field experience and research are required. Stacked with EDSE F622. (3+0+1)

**EDSE F448**      **Understanding FASD: Diagnosis, Intervention and Strategies**  
**3 Credits**

This is an overview course designed to educate candidates about Fetal Alcohol Spectrum Disorder: how they are acquired, current diagnostic strategies; intervention strategies within social services, therapeutic environments and school settings; and individual case management strategies. By the end of the course candidates should possess knowledge of working with children affected by fetal alcohol spectrum disorders, understand the psychosocial implications of this disorder, and be able to identify best possible strategies to accommodating and intervening with these individuals in a classroom setting. Cross-listed with PSY F448. Stacked with EDSE F648; PSY F648. (3+0)

**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.* (2.5+0+1)

**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 Fall

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, Management and Strategies I: Low Incidence**  
**3 Credits**      Offered Spring

Provides in-depth understanding of best practice strategies for supporting students with low incidence disabilities in culturally responsive ways. Development, implementation and evaluation of Individual Education Program (IEP) plan emphasizing transition plans for students with intensive needs that include a crisis management plan for severe behaviors. Community-based collaborative management techniques and plans will

## EDUCATION: SPECIAL EDUCATION (EDSE) — EDUCATOR: PARA-PROFESSIONAL (EDPA)

be developed to support post-school transitions. Field experience required. (3+0+1)

### EDSE F622 Curriculum, Management and Strategies II: High Incidence

#### 3 Credits

Provides in-depth understanding of best practice strategies supporting students with high incidence disabilities. A theoretical basis for selecting approaches is presented along with practical strategies of methods of instruction and classroom management for addressing the needs of students. Development, implementation, support and evaluation of Individual Education Program (IEP) plan for students with high incidence disabilities as well as classroom management techniques and plans developed for inclusion of high incidence disabilities in culturally responsive ways. Field and research experience required. Stacked with EDSE F422. (3+0+1)

### EDSE F624 Social/Emotional Development, Assessment and Intervention

#### 3 Credits

Offered Fall; As Demand Warrants

Review current research on typical and atypical social/emotional development within a cultural context. 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

Provides assessment and diverse 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, as well as consumer math for special needs learners who need to develop functional skills. Field experience required. (3+0+1)

### EDSE F632 Special Education Law: Principles and Practices

#### 3 Credits

Offered Summer

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 and Other Developmental Disabilities: Communication and Social Interventions

#### 3 Credits

Offered Spring; As Demand Warrants

Current methods for assessment and intervention of students with autism and other developmental disabilities. Current issues and trends affecting educational practices are analyzed. Case study method used to make assessment and instructional decisions for pro-social solutions. 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 in culturally responsive ways. (3+0+1)

### EDSE F642 Autism Spectrum Disorders and Other Developmental Disabilities: Sensory and Behavioral Interventions

#### 3 Credits

Offered Summer; As Demand Warrants

Review functional behavioral assessments, development of behavior plans, evaluation of sensory issues, use of social stories, social skills and life skills instruction to assist inclusive practices of students with autism spectrum disorders and other developmental disabilities. Field experience required. (3+0+1)

### EDSE F648

### Understanding FASD: Diagnosis, Intervention and Strategies

#### 3 Credits

This is an overview course designed to educate candidates about Fetal Alcohol Spectrum Disorder: how they are acquired, current diagnostic strategies; intervention strategies within social services, therapeutic environments and school settings; and individual case management strategies. By the end of the course candidates should possess knowledge of working with children affected by fetal alcohol spectrum disorders, understand the psychosocial implications of this disorder, and be able to identify best possible strategies to accommodating and intervening with these individuals in a classroom setting. Research projects required. **Prerequisites:** Graduate standing. Cross-listed with PSY F648. Stacked with EDSE F448; PSY F448 (3+0)

### EDSE F677

### English Language Arts Assessment, Curriculum and Strategies for Special Learners

#### 3 Credits

Offered Spring; As Demand Warrants

Provides in-depth review and analysis of current research on language and English Language Arts (reading, writing and spelling) acquisition, assessment and intervention. Emphasizes the use of evidence-based practices. Identifies the link between language and literacy development. Considers academic, cultural and linguistic diversity. Field experience required. (3+0+1)

### EDSE F678

### Special Education Clinical Practice: Initial

#### 3 Credits

Offered Every Fall, Spring, Summer

For initial licensure candidates only. Part-time fieldwork experience (minimum 120 hours) with individuals who have disabilities in approved K-12 public schools and affiliated facilities. Fieldwork assignments are in inclusive pullout and self-contained settings. Includes immersion in special education planning and teaching under the direction of a supervising teacher and university supervisor. Includes regularly scheduled seminars. Must be completed before enrollment in EDSE F680. Special fees apply. **Prerequisites:** Successful completion of 18 approved credits in graduate level special education course work. (3+0+20)

### EDSE F680

### Special Education Clinical Practice

#### 3 Credits

For certified and initial licensure special education candidates. Full time field experience with individuals who have disabilities in approved K-12 public schools and affiliated facilities. Fieldwork assignments vary across areas of teaching specialization. Candidates assume full classroom responsibilities for planning, instruction and assessment under the direction of site and university supervisors. Includes regular seminars. **Prerequisites:** Successful completion of 18 approved credits in graduate level special education course work; EDSE F678 (for initial licensure students only). (1+0+35)

### 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 course work. (3+0)

## EDUCATOR: PARA-PROFESSIONAL

### EDPA F110

### Introduction to Para-Professional Education

#### 2 Credits

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**  
 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 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 F251X.* (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 F251X; EE F102. Prerequisite or Co-requisite: MATH F252X.* (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 F252X. Prerequisite or Co-requisite: MATH F253X.* (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 F253X; 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. *Prerequisite or 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)

## ELECTRICAL ENGINEERING (EE)

**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 F253X. *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)

**EE F408 W,O**        **Power Electronics Design**  
**4 Credits**            Offered Spring  
Analysis and design of power electronic conversion, control and drive systems. 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. Includes laboratory exercises using power electronic converter boards, PSPICE, and a complete power electronics design project. *Prerequisites:* ENGL F111X; ENGL F211X or ENGL F213X; COMM F131X or COMM F141X; EE F303; EE F334; EE F354 or permission of instructor. *Prerequisites:* Senior standing. Stacked with EE F608. (3+3)

**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 F608 W,O Power Electronics Design**  
4 Credits Offered Spring

Analysis and design of power electronic conversion, control and drive systems. 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. Includes laboratory exercises using power electronic converter boards, PSPICE, and a complete power electronics design project. *Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; COMM F131X or COMM F141X; EE F303; EE F334; EE F354 or permission of instructor; senior standing.* Stacked with EE F408. (3+1)

**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 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. Special fees apply. *Prerequisites: Graduate standing or permission of instructor.* Stacked with EE F444 (3+3)

**EE F646 Wireless Sensor Networks**  
3 Credits Offered Fall Even-numbered Years

The course will survey the area of networked sensors, with a special focus on low-power wireless sensor networks. Topics covered will include communication standards and protocols for sensor networks, embedded operating systems, applications, collaborative processing, data fusion, and system architecture. Students will undertake a theoretical or practical research project. *Prerequisites: CS F201 or ES F201; EE F343 or EE F341; graduate standing or permission of instructor.* (3+0)

**EE F647 Data Compression**  
3 Credits Offered Spring Even-numbered Years

Study of algorithms and techniques that reduce information storage and transmission requirements. Both lossless and lossy techniques will be studied including: Hoffman coding, arithmetic coding, image compression, and transform techniques. *Prerequisites: ES F201 or CS F201 or equivalent.* (3+0)

**EE F648 VLSI Design**  
3 Credits Offered Spring Odd-numbered Years

Study of methods to integrate millions of transistors on a single chip and create optimized design. Topics include CMOS logic design, power and timing issues. VLSI architectures, and full custom layout. Students will use CAD tools to implement a VLSI design. *Prerequisite: EE F343 or equivalent.* (3+0)

**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 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 Aerospace Systems Engineering**  
3 Credits Offered Fall Odd-numbered Years

A multidisciplinary team of students will perform a preliminary design study of a major aerospace system. Design considerations will include requirements for project management, aerospace vehicle 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 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)

## ELECTRICAL ENGINEERING (EE) — EMERGENCY MEDICAL SERVICES (EMS)

**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 matrix 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)

**EE F675**            **Robot Modeling and Control**  
**3 Credits**            Offered As Demand Warrants  
Introduction to basic concepts in robotics; homogeneous transformations; Denavit-Hartenberg parameters, forward and inverse kinematics; velocity kinematics, Jacobians; dynamics and modeling; robot control: independent joint control, multivariable control, Lyapunov stability, PD+, computed torque, inverse dynamics control with the use of Matlab/Simulink, kinematics and control related demonstrations on the PUMA 560 manipulator. *Prerequisites: EE F471, PHYS F212 or equivalent courses in automatic control systems, and mechanics. Recommended: EE F303 or equivalent electrical machinery courses and some experience with MATLAB.* (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. *Prerequisites: Placement in DEVM F054; 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**            **FCC Amateur and General Radiotelephone Operator Licensing**  
**1-3 Credits**            Offered As Demand Warrants  
An introduction to the study of radio frequency transmission and receiving will be taught. Basic AC electronics in the radio frequency ranges will be studied. Some of the circuits studied are oscillators, modulators, mixers, amplifiers and filters. The classes will include a hands-on demonstration as part of the lecture. Completion of the class will give the student the instruction necessary to complete an Amateur Radio License test and a background for the General Radiotelephone Operator commercial test (GROL). (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.* (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.* (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. (3+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 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 advanced 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 Paramedic 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 Paramedic 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 paramedic 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)

**ESM F450 W      Economic Analysis and Operations**  
3 Credits

Fundamentals of engineering economy, project scheduling, estimating, legal principles, professional ethics 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 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 F253X; 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. **Prerequisite or Co-requisite: MATH F151X; or MATH F152X; or placement into MATH F251X.** (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 F151X; MATH F152X; or enrollment in MATH F251X.** (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 F101; MATH F252X; 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 F252X; 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; MATH F252X.** (3+0)

**ES F301      Engineering Analysis**  
3 Credits

Application of numerical tools, including software, to typical engineering design problems. Selected topics from all fields of engineering. **Prerequisites: ES F201; Prerequisites or co-requisites: MATH F302.** (3+0)

ES F307 3 Credits	Elements of Electrical Engineering
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 machines and transformers. <i>Prerequisites: MATH F252X; or permission of instructor.</i> (3+0)	
ES F331 3 Credits	Mechanics of Materials
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. <i>Prerequisites: ES F208 or ES F209; MATH F252X.</i> (3+0)	
ES F341 4 Credits	Fluid Mechanics
Statics and dynamics of fluids; energy and momentum principles. Dimensional analysis; flow in open channels, closed conduits and around submerged bodies. Special fees apply. <i>Prerequisites: ES F208 or ES F210; MATH F252X.</i> (3+3)	
ES F346 3 Credits	Basic Thermodynamics
Thermodynamic systems, properties, processes and cycles. Fundamental principles of thermodynamics (first and second laws), and elementary applications. <i>Prerequisites: MATH F252X; PHYS F211X.</i> (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.

ENGL F104 3 Credits	Institute on Language, Thought and Culture 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 3 Credits	Introduction to Academic Writing
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. <i>Prerequisites: Placement into ENGL F111X.</i> (3+0)	
ENGL F200X 3 Credits	World Literature (h)
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. <i>Prerequisites: ENGL F111X or placement in ENGL F211X/ENGL F213X; sophomore standing; or permission of instructor.</i> Cross-listed with FL F200X. (3+0)	
ENGL F211X 3 Credits	Academic Writing about Literature
Instruction in writing through close analysis of literature. Research paper required. Strongly recommended for English and other humanities majors. <i>Prerequisites: ENGL F111X or its equivalent. Recommended: Sophomore standing.</i> (3+0)	

ENGL F212 3 Credits	Business, Grant and Report Writing 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. <i>Prerequisites: ENGL F111X.</i> (3+0)	
ENGL F213X 3 Credits	Academic Writing about the Social and Natural Sciences
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. <i>Prerequisites: ENGL F111X or equivalent. Recommended: Sophomore standing.</i> (3+0)	
ENGL F217 3 Credits	Introduction to the Study of Film (h) 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. <i>Prerequisites: ENGL F111X.</i> Cross-listed with FLM F217; JRN F217. (2+2)	
ENGL F218 3 Credits	Themes in Literature (h) 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. <i>Prerequisites: ENGL F111X or permission of instructor.</i> (3+0)	
ENGL F219 3 Credits	Aleut Narrative Art ❄️ 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 Alaska campus. <i>Prerequisites: ENGL F111X or permission of instructor.</i> (3+0)	
ENGL F230 3 Credits	English Language Proficiency Offered As Demand Warrants
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. <i>Prerequisites: Permission of instructor.</i> (3+0)	
ENGL F231 3 Credits	English Language Proficiency Offered As Demand Warrants
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. <i>Prerequisites: Permission of instructor. Note: Open only to students for whom English is a foreign language.</i> (3+0)	
ENGL F271 3 Credits	Introduction to Creative Writing: Fiction (h) Offered Fall and Spring
Forms and techniques of fiction for beginning students; discussion of students' work in class and in individual conferences. <i>Prerequisites: ENGL F111X or permission of instructor.</i> (3+0)	
ENGL F272 3 Credits	Introduction to Creative Writing: Poetry (h) Offered Fall and Spring
Forms and techniques of poetry for beginning students; discussion of students' work in class and in individual conferences. <i>Prerequisites: ENGL F111X or permission of instructor.</i> (3+0)	

## ENGLISH (ENGL)

**ENGL F273 Introduction to Creative Nonfiction (h)**  
**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, pre-colonial 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. *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. *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 As Demand Warrants  
Instruction in writing for students who wish to develop proficiency in organizing and composing essays on factual material. 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. *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)

**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, Athabaskan Eyak, Tlingit, Haida and Tsimshian storytellers. Bibliography, Alaska Native genres and viewpoints, and structural and thematic features of *Prerequisites: ENGL F111X or permission of instructor*. Cross-listed with ANS F349. (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** Offered Fall and Spring  
 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, ENGL F272 or ENGL F273 or permission of instructor*. (3+0)
- ENGL F380 Topics in Colonial and Postcolonial Literature** (h)  
**3 Credits** Offered Spring Odd-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- and 18th-Century British Literature** (h)  
**3 Credits** Offered Every Third Fall  
 Intensive study of variable topics in 17th- 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)
- 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 1940s: 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 F449 Northern and Environmental Literature** (h)✳  
**3 Credits**  
 Intensive study of particular aspects of Alaska and circumpolar writing, ecocritical theory and the literature of environmental studies. *Prerequisites: ENGL F211X; or ENGL F213X; or permission of instructor*. Cross-listed with NORS F449. (3+0)
- ENGL F450 W,O/2 Studies in 19th-Century British Literature** (h)  
**3 Credits** Offered Every Third Fall  
 Intensive study of variable topics in 19th-century British literature. May take up a variety of concerns by focusing on literature associated with one or more specific 19th-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

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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- 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** Offered Fall and Spring  
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 **Topics in Language and Literature** (h)

**3 Credits** Offered Every Fall and Spring  
Intensive study of variable topics in language and literature. May focus on themes, such as race, war, or the natural world; an aspect of language and linguistics; or an aspect of contemporary literary theory. Intensive readings and research in contemporary 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 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)

### 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 Offered Fall and Spring  
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 Offered Fall and Spring  
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)

**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)

**ESLG F121 Intermediate Academic Listening and Speaking I**  
4 Credits Offered Fall  
This course provides listening, note taking, and speaking skills development for the American university context. By the end of the course, students will be better able to understand and take notes on lectures covering a variety of academic topics, take an active role in classroom discussions, and give formal presentations. *Prerequisites: A minimum score of 50 on the TOEFL Internet-based test (iBT) or permission of the instructor.* (4+0)

**ESLG F131 Intermediate Academic Listening and Speaking II**  
4 Credits Offered Spring  
This course provides listening, note taking, and speaking skills development for the American university context. By the end of the course, students will be better able to understand and take notes on lectures covering a variety of academic topics, take an active role in classroom discussions, and give formal presentations. *Prerequisites: A minimum score of 50 on the TOEFL Internet-based test (iBT) or permission of the instructor.* (4+0)

**ESLG F141 Advanced Academic Listening and Speaking I**  
4 Credits Offered Fall  
This course provides listening, note taking, and speaking skills development for the American university context. By the end of the course, students will be better able to understand and take notes on lectures covering a variety of academic topics, take an active role in classroom discussions, and give formal presentations. *Prerequisites: A minimum score of 60 on the TOEFL Internet-based test (iBT) or permission of the instructor.* (4+0)

## ENVIRONMENTAL ENGINEERING AND 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 F252X; PHYS F211X. Cross-listed with ME F458. (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 Spring Odd-numbered Years  
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. *Prerequisites:* CHEM 106X or equivalent. *Recommended:* MATH F252X; graduate standing; or permission of instructor. Stacked with CE F443. (3+0)

**ENVE F644 Environmental Management and Permitting**  
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 Fall Odd-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 F252X; CHEM F106X or equivalent; graduate standing; or permission of instructor. (3+0)

**ENVE F646 Unit Processes — Biological**  
3 Credits Offered Spring Even-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)

**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 F252X; 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 F115 Rural Solid and Hazardous Waste Management**  
**1 Credit** Offered as Demand Warrants  
 An overview of solid and hazardous waste management focusing on rural Alaskan communities. Topics covered include: workplace safety, worker roles, recycling facility operation, solid waste composting, hazardous material and waste inventorying, toxicology principles, risk assessment, hazardous site community open dumpsite assessment and the implications of the National Environmental Policy Act. Graded Pass/Fail. (1+0)

**ENVI F116 Rural Alaska Landfill Operator**  
**1 Credit** Offered as Demand Warrants  
 Covers best practices in managing rural landfills in compliance with State of Alaska regulations and guidelines with an emphasis on operator and public safety. This course is designed to train operators for rural Alaska Class II and Class III landfills and passing grade results in formal recognition by the Solid Waste Association of North America-Alaska (SWANA-Alaska). Graded Pass/Fail. (1+0)

**ENVI F117 Community Spill Response**  
**1 Credit** Offered as Demand Warrants  
 Overview of the responses to petroleum and other spills that threaten community health with emphasis placed upon the issues, techniques and the basic elements of spill response in Alaskan communities. Topics include: storage tanks above and underground, spill contamination site treatment, state and federal governmental regulations related to spills, spill reporting/incident action plans, and practical procedures in spill response. Graded Pass/Fail. (1+0)

**ENVI F120 Home Energy Basics**  
**1 Credit** Offered Fall  
 Basics of space heating and electricity use and production for Alaskan homes. Main topics include fundamentals of physics related to home energy, lighting and appliances, energy bills, building science, retrofits, home renewable energy systems. Course emphasizes how to decrease fossil fuel consumption of homes. Graded Pass/Fail. (1+0)

**ENVI F121 Building Ventilation and Energy**  
**1 Credit** Offered Spring  
 Basics of indoor air quality and its relationship to ventilation and energy use in buildings. Main topics include types of indoor air pollutants; basic science related to moisture, condensation, and mold; and heat recovery ventilation. Course emphasizes practical ways of how homeowners can maintain healthy indoor air while keeping their energy bill low. Graded Pass/Fail. (1+0)

**ENVI F122 Energy Efficient Building Design and Simulation**  
**1 Credit** Offered Spring  
 In this course, students gain basic practical knowledge related to the process of designing energy efficient buildings, as applied to both new construction and retrofits. Main topics covered include basic building science, principles and techniques of energy efficient construction, and building energy simulations. Graded Pass/Fail. (1+0)

**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 F150 Viewpoints in Environmental Studies**  
**1 Credit** Offered As Demand Warrants  
 Discussions and activities will focus on how scientists or research technicians evaluate environmental issues. The course is intended for first year college students and community members. Specific topics may include sustainability, resource development, ecosystem management, indigenous viewpoints, building technology, appropriate energy applications, and analysis of data. Topics announced prior to each offering and course may be repeated for credit towards a certificate or degree program to a maximum of 3 credits. Graded Pass/Fail. (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 F220 Introduction to Sustainable Energy**  
**3 Credits** Offered Fall  
 Introduction to societal problems and solutions related to its energy use and production. Problems discussed are mainly related to the extent of sustainability of current energy practices. Solutions discussed cover both energy efficiency and renewable energy. *Prerequisites: DEVM F105 or CTT F106 or TTCH F131 or permission of instructor. Recommended: ENVI F101; ENVI F120.* (3+0)

**ENVI F250 Current Topics in Environmental Studies**  
**1-3 Credits** Offered As Demand Warrants  
 Using multiple scientific viewpoints, a specific environmental issue is explored through case studies and in-depth discussions with an emphasis on complex connections between ecosystems and society. Themes include sustainability, resource development, indigenous viewpoints, resource management, building technology, and energy applications. Topics announced prior to each offering and course may be repeated for credit towards a certificate or degree program to a maximum of 3 credits. *Prerequisites: ENVI F101; ENGL F111X; 100-level science class; or permission of instructor.* (3+0)

**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. *Prerequisites: 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**

**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)

**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 F131 Beginning Yup'ik Grammar II (h)**  
**3 Credits** Offered Fall  
 Continuation of literacy and grammatical analysis of Central Yup'ik. Students will learn intermediate grammatical concepts and literacy skills, with consideration given to dialect differences. *Prerequisites: ESK F130; or permission of instructor.* (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)

**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)

## ESKIMO (ESK) — FILM (FLM)

**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)

**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 Yup'ik. 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

**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 eLearning & Distance Education 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. Special fees apply. 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 F251 Introduction to Video Production**  
**4 Credits** Offered Fall  
 An introduction to video production with an emphasis on television studio production. 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 F289 Reel Workshop/Review**  
**0 Credits** Offered Spring  
 Film majors are required to participate in Reel Workshop/Review every year. Annual participation as a registered student begins sophomore year, and continues sequentially for each year of attendance. Students will participate in a workshop on creating a film reel, have time to develop that reel, then present their industry reel and resume to faculty for professional development. Film majors are also expected to attend all department "Town Hall" and safety meetings. Graded Pass/Fail. (0.5+0.5)

**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)

**FLM F308 Film Criticism (h)**  
**3 Credits**  
 Theoretical approaches to viewing, analyzing and evaluating film and television program content. Note: Available via eLearning & Distance Education 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 Fall Odd-numbered Years  
 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: FLM/THR F271; FLM/THR F273; FLM/JRN F290 or permission of instructor. Recommended: FLM/ENGL F217; THR F121; THR F215.* Cross-listed with THR F331. (1+4)

**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 F358 Lights, Camera, Audio!**  
**3 Credits** Spring Even-numbered Years  
 Focusing on what actually makes a video, we will explore lighting and sound design techniques to improve the quality of video projects. Idealized and practical tactics will be investigated. Special fees apply. *Prerequisites: FLM F271 or JRN F280 Recommended: FLM F273* (3+0)

**FLM 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 HIST F368 and JRN F368. (3+0)

**FLM F371 O Digital Imaging (h)**  
**3 Credits**  
 This course focuses on creating and manipulating digital images, including digital painting and photography. The varied ethical issues engendered by this expertise will be addressed in depth. Skills and knowledge useful for digital photography, digital video compositing and digital painting will be covered. Special fees apply. *Prerequisites: ART F161 or ART F271 or ART F284/JRN F204 or FLM/JRN F290; COMM F131X or COMM F141X.* 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. *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 F389 Reel Workshop/Review**  
**0 Credits** Offered Spring  
 Film majors are required to participate in Reel Workshop/Review every year. Annual participation as a registered student begins sophomore year, and continues sequentially for each year of attendance. Students will participate in a workshop on creating a film reel, have time to develop that reel, then present their industry reel and resume to faculty for professional development. Film majors are also expected to attend all department "Town Hall" and safety meetings. Graded Pass/Fail. *Prerequisites: FLM F289.* (0.5+0.5)

## FILM (FLM) — FIRE SCIENCE (FIRE)

**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. *Prerequisites: 18 credits in upper division film classes or permission of instructor. Recommended: FLM F271, FLM F245.* (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 1940s: 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. Special fees apply. *Prerequisites: FLM F273, FLM F331, FLM/JRN F290. Recommended: FLM F271, FLM F334.* Cross-listed with THR F431. (3+0)

**FLM F433 Studies in French and European Cinema (h)**  
**3 Credits** Offered Spring or Summer Odd-Numbered Years  
The course discusses the evolution of French and European cinema in historical and artistic contents. *Prerequisites: ENGL F217 or FLM F217; ENGL F211X or ENGL F213X; FREN F301 or FREN F302 or permission of instructor.* Cross-listed with FREN F433. (2+2)

**FLM F458 SFX Up Your Video (h)**  
**3 Credits** Offered Spring Odd-numbered Years  
An exploration into adding special effects to your video projects. Will include “green screen,” titles, animation, color grading, DVD menu design and more. Special fees apply. *Prerequisites: FLM/JRN F290; FLM/THR F271 or FLM/JRN F280; video editing experience or permission of instructor.* Cross-listed with JRN F458. (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. Special fees apply. *Prerequisites: Junior, senior or graduate standing or permission of instructor.* Cross-listed: 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 3D Animation (h)**  
**3 Credits** Offered Fall  
Concept and technique of 3D computer generated 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/FLM/THR F172; ART F371/FLM F371; or equivalent; COMM F131X or COMM F141X.* Cross-listed with ART F472; JRN F472. (1+4)

**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. *Prerequisites: Basic experience in shooting and editing video or permission of instructor.* Cross-listed with JRN F480. (3+0)

**FLM 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, and present topics in film theory. Readings and topics discussed reflect issues of current interest. *Prerequisites: Junior standing, or permission of instructor.* Cross-listed with RUSS F484. (3+0)

**FLM 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 ENGL F488; THR F488. (3+0)

**FLM F489 Reel Workshop/Review**  
**0 Credits** Offered Spring  
Film majors are required to participate in Reel Workshop/Review every year. Annual participation as a registered student begins sophomore year, and continues sequentially for each year of attendance. Students will participate in a workshop on creating a film reel, have time to develop that reel, then present their industry reel and resume to faculty for professional development. Film majors are also expected to attend all department “Town Hall” and safety meetings. Graded Pass/Fail. *Prerequisites: FLM F389.* (0.5+0.5)

## 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)

<b>FIRE F105</b> <b>3 Credits</b>	<b>Fire Prevention</b> 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. <i>Prerequisites: FIRE F101 or permission of instructor.</i> (3+0)			
<b>FIRE F107</b> <b>3 Credits</b>	<b>Strategy and Tactics</b> Offered Spring		
The principles of fire control through utilization of personnel, equipment and extinguishing agents on the fire ground. <i>Prerequisites: FIRE F101 or permission of instructor.</i> (3+0)			
<b>FIRE F110</b> <b>3 Credits</b>	<b>Introduction to Hazardous Waste Operations and Emergency Response</b> 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)			
<b>FIRE F115</b> <b>3 Credits</b>	<b>Fire Apparatus and Equipment</b> Offered Spring Even-numbered Years		
Fire apparatus design, specifications and performance capabilities, effective use of apparatus in fire emergencies. <i>Prerequisites: FIRE F101 or permission of instructor.</i> (3+0)			
<b>FIRE F117</b> <b>3 Credits</b>	<b>Rescue Practices</b> 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. <i>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.</i> (3+0)			
<b>FIRE F121</b> <b>3 Credits</b>	<b>Fire Behavior and Combustion</b> Offered Fall		
Theories and fundamentals of how and why fires start, spread, and how they are controlled. (3+0)			
<b>FIRE F123</b> <b>3 Credits</b>	<b>Fire Investigations I</b> 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. <i>Prerequisites: FIRE F101 or permission of instructor.</i> (3+0)			
<b>FIRE F127</b> <b>1 Credit</b>	<b>Vessel Safety: Emergency Equipment, Procedures and Drills</b> 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)			
<b>FIRE F131</b> <b>3 Credits</b>	<b>Firefighter I, Series I</b> 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. <i>Prerequisites: All students are required to wear a complete set of fire department approved protective clothing (turnout gear). Limited quantities</i>			
			<i>are available for loan through the Emergency Services Program coordinator.</i> (3+0)
<b>FIRE F133</b> <b>3 Credits</b>	<b>Firefighter I, Series II</b> 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. <i>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.</i> (2+2)			
<b>FIRE F135</b> <b>3 Credits</b>	<b>Firefighter I, Series III</b> 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. <i>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 is offered each semester and must be completed in order to participate in live fire exercises.</i> (2+2)			
<b>FIRE F137</b> <b>3 Credits</b>	<b>Firefighter I, Series IV</b> 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)			
<b>FIRE F143</b> <b>1 Credit</b>	<b>Firefighter Internship, Series 1</b> Offered Fall		
Practical experience in fire operations and training by arrangement through local fire departments. Graded Pass/Fail. (0+2)			
<b>FIRE F145</b> <b>1 Credit</b>	<b>Firefighter Internship, Series 2</b> Offered Spring, As Demand Warrants		
Practical experience in fire operations and training by arrangement through local fire departments. Graded Pass/Fail. <i>Prerequisites: FIRE F143.</i> (0+2)			
<b>FIRE F147</b> <b>1 Credit</b>	<b>Firefighter Internship, Series 3</b> Offered Spring, As Demand Warrants		
Practical experience in fire operations and training by arrangement through local fire departments. <i>Prerequisites: FIRE F145.</i> (0+2)			
<b>FIRE F151</b> <b>3 Credits</b>	<b>Wildland Firefighter I</b> Offered Spring		
Designed to provide entry-level wildland firefighters the skills and knowledge to safely function as a member of a firefighting crew. Includes fundamental knowledge of wildland fire organization, fire behavior, suppression methods, safety and the incident command system. This course is based on a number of individual National Wildfire Coordinating Group (NWCG) courses. 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). NWCG courses for F151 include: S-130 Firefighter Training S-190 Introduction to Wildland Fire Behavior L-180 Human Factors in Wildland Fire Service L-200 Basic ICS, ICS for Single Resource and Initial Action Incidents. (3+0)			

## FIRE SCIENCE (FIRE)

### **FIRE F152 Wildland Firefighter II** 3 Credits Offered Spring

Provides wildland firefighters with knowledge and skills in the deployment, use, safe practices and field maintenance of engine-powered wildland firefighting tools: portable pumps and chainsaws. This course is based on National Wildfire Coordinating Group (NWCG) courses: S-211 Portable Pumps and Water Use; S-212 Wildland Fire Chainsaws. Must have the ability/strength to start a portable pump and chainsaw. *Prerequisites: FIRE F151 or permission of instructor.* (3+0)

### **FIRE F153 Wildland Firefighter III** 2 Credits Offered Fall

Designed to meet the training needs of the advanced wildland firefighter. Course content includes training in use of fireline reference materials, recognition and mitigation of safety issues, and provides a solid foundation of basic leadership skills. This course is based on a number of individual National Wildfire Coordinating Group (NWCG) courses. NWCG courses included: S-131 Wildland Firefighter Type I; S-133 Look Up, Look Down, Look Around; L-280 Followership to Leadership. *Prerequisites: FIRE F151 or instructor permission.* (2+0)

### **FIRE F154 Basic Wildland Fire Safety** 1.5 Credits Offered Spring

Designed to meet the training needs of the Advanced Wildland Firefighter. The course includes development of a personal safety program and creating a list of performance standards based on the LCES mnemonic. This course is based on National Wildfire Coordinating Group (NWCG) courses. NWCG courses include: S-134 LCES. *Prerequisites: FIRE F151 or instructor permission.* (1.5+0)

### **FIRE F155 Wildland Fire Behavior I** 2 Credits Offered Spring Odd-numbered Years

This course is a classroom-based skills course designed to prepare the prospective fireline supervisor to undertake safe and effective fire management operations. Its serves to develop fire behavior prediction knowledge and skills. Fire environment differences are discussed as necessary; instructor will stress local Alaskan conditions. This course is based on a National Wildfire Coordinating Group (NWCG) course. NWCG courses include: S-290 Intermediate Wildland Fire Behavior. *Prerequisites: FIRE F151; or permission of instructor.* (2+0)

### **FIRE F157 Wildland Air Operations** 3 Credits Offered Fall Odd-numbered Years

Introduction to aircraft types and capabilities, aviation policy and safety for flying in and working with agency aircraft, tactical and logistical uses of aircraft, and requirements for helicopter take-off and landing areas. This course is designed to provide student proficiency in all areas of the tactical and logistical use of helicopters to achieve efficiency and standardization. Topics include aviation safety, aircraft capabilities and limitations, aviation life support equipment, aviation mishap reporting, pre-flight checklist and briefing/debriefing, aviation transportation of hazardous materials, crash survival, helicopter operations. Emphasis is on aviation safety. This course is based on National Wildfire Coordinating Group (NWCG) courses: S-270 Basic Air Operations; S-271 Helicopter Crewmember (FIRE F157 will not include Module A-119 which is a required field exercise for S-271. Students will need to complete this field exercise). *Prerequisites: FIRE F151 or permission of instructor.* (3+0)

### **FIRE F159 Wildland Fire Urban Interface Operations** 2 Credits Offered Fall Odd-numbered Years

Designed to assist both structural and wildland firefighters who will be making tactical decisions when confronting wildland fire that threatens life, property and improvements in the wildland/urban interface. Instructional units include interface awareness, size-up, initial strategy and incident action plan, structure triage, structure protection tactics, incident action plan assessment and update, follow up and public relations, and firefighter safety in the interface. This course is based on a National Wildland Coordinating Group (NWCG) course. NWCG courses include: S-215 Fire

Operations in the Wildland/Urban Interface. *Prerequisites: FIRE F151 and FIRE F153 or instructor permission.* (2+0)

### **FIRE F161 Incident Logistics Function** 2 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, incident communications manager, security manager and radio operator. This course is based on a number of individual National Wildfire Coordinating Group (NWCG) job aids. NWCG courses include: J-252 Ordering Manager; J-253 Receiving and Distribution Manager; J-254 Base/Camp Manager; J-255 Equipment Manager; J-257 Incident Communications Manager; J-259 Security Manager; J-158 Radio Operator. (2+0)

### **FIRE F163 Wildland Fire Dispatch I** 2 Credits Offered Spring Odd-numbered Years

The purpose of this course is to provide students with the skills to perform as a dispatch recorder. Topics include the structure of the expanded dispatch organization, description of resource ordering processes, and the importance of effective communication skills and working relationships. Additionally, the course provides a solid foundation on the use of Resource Ordering Statusing System (ROSS), addressing the functions and capabilities of ROSS that will be used by most dispatchers. This is an interactive course that combines lecture and hands on practice in the application. This course is based on National Wildfire Coordinating Group (NWCG) courses: D-110 Expanded Dispatch Recorder; ROSS Dispatch — Basic. (2+0)

### **FIRE F165 ICS and the Incident Planning Function** 2 Credits Offered Fall Odd-numbered Years

An overview of the Incident Command System principles and planning processes, organizational relationships with other functions, use of planning matrix board, resource management, documentation, demobilization, use of technical specialist and components of an incident action plan. This course is based on Federal Emergency Management Agency (FEMA) courses: I-200 Basic ICS: ICS for Single Resources and Initial Action Incidents; I-300 Intermediate ICS: ICS for Supervisors. *Prerequisites: FIRE F151 or permission of instructor.* (2+0)

### **FIRE F170 Incident Information** 2 Credits Offered As Demand Warrants

The purpose of this course is to provide students with the skills and knowledge needed to serve as an entry-level public information officer (PIOF) on an incident or event. The course covers establishing and maintaining an incident information operation, communicating with internal and external audiences, working with the news media, handling special situations, and long term planning and strategy. This course is based on National Wildfire Coordinating Group (NWCG) courses: S-203 Introduction to Incident Information. *Prerequisites: FIRE F151 or instructor permission.* (2+0)

### **FIRE F176 Wildland Fire Ignition Operations** 1 Credit Offered Spring Even-numbered Years

This course introduces the roles and responsibilities of a firing boss (FIRB), common firing devices, and general firing operations and techniques. The course provides students with important information concerning general tasks required to be successful. This course is based on a National Wildfire Coordinating Group (NWCG) course: S-234: Ignition Operations. *Prerequisites: FIRE F155 or instructor permission.* (1+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 F055 or placement into DEVM F105; FIRE F101; or permission of instructor.* (3+0)

<b>FIRE F203</b> <b>3 Credits</b>	<b>Hazardous Materials Chemistry I</b> Offered Fall	<b>FIRE F218</b> <b>3 Credits</b>	<b>Advanced Rescue Practices</b> Offered Fall
Basic fire chemistry relating to most categories of hazardous materials including problems of recognition, reactivity and health risks encountered by fire fighters. <i>Prerequisites: Satisfactory demonstration of basic chemistry knowledge (pretest) or permission of instructor.</i> (3+0)		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. <i>Prerequisites: EMS F170; FIRE F117; or permission of instructor.</i> (3+0)	
<b>FIRE F206</b> <b>3 Credits</b>	<b>Building Construction for Fire Protection</b> Offered Spring	<b>FIRE F219</b> <b>3 Credits</b>	<b>Rapid Intervention Company Operations</b> Offered As Demand Warrants
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. <i>Prerequisites: FIRE F101 or employment or experience in related field, such as fire protection, insurance, construction architecture, or engineering.</i> (3+0)		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. <i>Prerequisites: FIRE F117, FIRE F131, FIRE F133, FIRE F135 and FIRE F137; or department head approval.</i> (2.5+1)	
<b>FIRE F207</b> <b>3 Credits</b>	<b>Hazardous Materials Technician</b> Offered As Demand Warrants	<b>FIRE F220</b> <b>3 Credits</b>	<b>Emergency Services Safety, Health and Survival</b> Offered Fall
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. <i>Prerequisites: FIRE F205 or permission of instructor.</i> (3+0)		This course introduces the basic principles and history related to the national firefighter life safety initiatives, focusing on the need for cultural and behavior changes throughout the emergency services. This interactive course will examine current and future issues in emergency services including close calls, near misses, line of duty deaths, risk management, mitigation, and personal and organizational accountability. <i>Prerequisites: FIRE F101, FIRE F131, FIRE F133, FIRE F135 and FIRE F137.</i> (3+0)	
<b>FIRE F210</b> <b>3 Credits</b>	<b>Fire Administration I</b> Offered Fall	<b>FIRE F232</b> <b>3 Credits</b>	<b>Fire Fighter II</b> Offered Summer, As Demand Warrants
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. <i>Prerequisites: FIRE F101 or permission of instructor.</i> (3+1)		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. <i>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.</i> (2+2)	
<b>FIRE F212</b> <b>3 Credits</b>	<b>Building and Fire Codes</b> Offered Spring Even-numbered Years	<b>FIRE F244</b> <b>1 Credit</b>	<b>Firefighter Internship, Series 4</b> Offered Fall
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. <i>Prerequisites: FIRE F101; FIRE F206; or permission of instructor.</i> (3+0)		Practical experience in fire operations and training by arrangement through local fire departments. <i>Prerequisites: FIRE F145 or FIRE F147.</i> (0+2)	
<b>FIRE F214</b> <b>3 Credits</b>	<b>Fire Protection Systems</b> Offered Fall	<b>FIRE F246</b> <b>1 Credit</b>	<b>Firefighter Internship, Series 5</b> Offered Spring
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. <i>Prerequisites: FIRE F101 or permission of instructor.</i> (3+0)		Practical experience in fire operations and training by arrangement through local fire departments. <i>Prerequisites: FIRE F244.</i> (0+2)	
<b>FIRE F215</b> <b>3 Credits</b>	<b>Advanced Hazardous Materials Technician</b> Offered As Demand Warrants	<b>FIRE F248</b> <b>1 Credit</b>	<b>Firefighter Internship, Series 6</b> Offered Summer, 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. <i>Prerequisites: FIRE F207 or permission of instructor.</i> (2+2)		Practical experience in fire operations and training by arrangement through local fire departments. <i>Prerequisites: FIRE F246.</i> (0+2)	
<b>FIRE F216</b> <b>3 Credits</b>	<b>Methods of Instruction for Emergency Services Training</b> Offered Spring Odd-numbered Years	<b>FIRE F251</b> <b>3 Credits</b>	<b>Wildland Firefighter IV</b> Offered Spring
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)		This course is intended to meet the training needs of the first line leadership positions in wildland fire suppression. Lessons are designed to produce student proficiency in the performance of duties from initial dispatch through demobilization back to the home unit. Topics include operational leadership, preparation and mobilization, assignment preparation, size up, developing a plan of action, risk management, entrapment avoidance, safety and tactics, offline duties, demobilization, and post incident responsibilities. Portions	
<b>FIRE F217</b> <b>1 Credit</b>	<b>Hazardous Materials Technician Refresher</b> 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. <i>Prerequisites: FIRE F206 or equivalent with certification that may not be expired for more than one calendar year.</i> (1+0)			

## FIRE SCIENCE (FIRE)

of the course will be blended learning with some lessons online. This course is based on National Wildlife Coordinating Group (NWCWG) courses: S-200 Initial Attack Incident Commander; S-230 Crew Boss (Single Resource).

**Prerequisites:** FIRE F151; FIRE F153 and FIRE F155 or permission of the instructor. (3+0)

### FIRE F252 Wildland Fire Prevention I

**3 Credits** Offered Spring Even-numbered Years

Designed to enhance the basic skill and knowledge of personnel assigned responsibilities for wildfire prevention. Additionally, this course will teach sound wildland fire observations and scene of origin protection practices that enable the first responders to identify and preserve evidence of fire cause. An introduction to Alaskan wildland fire prevention statutes, regulations and enforcement procedures will be included. This course is based on National Wildfire Coordinating Group (NWCWG) courses: P-101 Fire Prevention Education I; FI-110 Wildland Fire Observation and Origin Protection. **Prerequisites:** FIRE F151 or instructor permission. (3+0)

### FIRE F253 Wildland Fire Investigation I

**3 Credits** Offered As Demand Warrants

Consistent fundamentals and technical knowledge base needed for the wildland fire origin and cause determination investigator (INVF). The concepts taught will include recognizing and conducting origin and cause determination, preservation of evidence and documentation, which will aid an investigator to perform at a professional level on a national basis. This course is based on a National Wildlife Coordinating Group (NWCWG) course: FI-210 Wildland Fire Origin and Cause Determination. **Prerequisites:** FIRE F151; FIRE F155 and FIRE F252 or permission of the instructor. (3+0)

### FIRE F254 Incident Finance and Administration

**1.5 Credits** Offered Fall

Incident business management objectives, including duties and responsibilities of the Incident Command System (ICS) finance/administration section relating to management practices and programs. Parts of this course are presented in a blended learning format. This course is based on a National Wildfire Coordinating Group (NWCWG) course: S-260 Interagency Incident Business Management. (1.5+0)

### FIRE F255 Wildland Fire Behavior II

**2 Credits** Offered Spring Even-numbered Years

This course will give students an understanding of the determinants of fire behavior through studying input datum for fire (weather, slope, fuels and fuel moisture). Operation of fire behavior prediction tools, assessing and selecting proper inputs, interpreting the results in terms of rate of spread, fire line intensity, potential for extreme fire behavior; and documentation processes. This course is based on a National Wildlife Coordinating Group (NWCWG) course: S-390 Introduction to Wildland Fire Behavior Calculations. **Prerequisites:** FIRE F155 or permission of the instructor. (2+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 F257 Wildland Fire Helicopter Management

**2 Credits** Offered As Demand Warrants

A comprehensive examination of interagency government helicopter operations to prepare the student to perform the job of Helicopter Manager. Topics covered include: agency policy, flight manuals, helicopter capabilities and communications, flight following, fueling procedures, contract administration and pay documents, pre and post-use inspections, risk management and required safety procedures, general and specialized helicopter operations such as qualifying landing areas, transportation of passengers and cargo, initial attack operations, and sustained support to incidents. This course is based on a National Wildlife Coordinating Group (NWCWG) course:

S-372 Helicopter Management. **Prerequisites:** FIRE F157 or permission of the instructor. (2+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)

### FIRE F262 Wildland Fire Tactical Operations

**2 Credits** Offered Fall Even-numbered Years

This course is intended to produce proficiency in the selection and implementation of wildland fire suppression tactics necessary at the strike team/task force leader level. Topics include fire line construction, use of hand tools, heavy equipment, water and engines, firing operations and using combinations of resources. This is an advanced level course for trained and experienced wildland firefighters. This course is based on a National Wildland Coordinating Group (NWCWG) course: S-336 Tactical Decision Making in Wildland Fire. **Prerequisites:** FIRE F155 and FIRE F251 or permission of instructor. (2+0)

### FIRE F264 Incident Business Practices

**1.5 Credits** Offered As Demand Warrants

Incident business procedures required in entry level staff positions including financial management of a large complex incident. This course is based on a National Wildlife Coordinating Group (NWCWG) course: S-261 Applied Interagency Incident Business Management. **Prerequisites:** FIRE F254. (1.5+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)

### FIRE F276 Prescribed Fire I

**2 Credits** Offered As Demand Warrants

Provide a thorough familiarization with the Interagency Prescribed Fire Planning and Implementation Procedures Reference Guide. Students will develop the knowledge and skills needed to prepare a prescribed fire plan, in accordance with the guide, ready for technical review and approval. This course is based on a National Wildlife Coordinating Group (NWCWG) course: RX-341 Prescribed Fire Burn Plan Preparation. **Prerequisites:** FIRE F255 or permission of the instructor. (2+0)

### FIRE F277 Prescribed Fire II

**2 Credits** Offered As Demand Warrants

This course is designed to introduce students to the tools and techniques used to perform in the role of a prescribed fire burn boss. It leads the students through the duties and responsibilities associated with the position including evaluation and implementation of a prescribed fire plan. This course is based on a National Wildlife Coordinating Group (NWCWG) course: RX-301 Prescribed Fire Implementation. **Prerequisites:** FIRE F251; FIRE F255 or permission of the instructor. (2+0)

### FIRE F278 Prescribed Fire III

**2 Credits** Offered As Demand Warrants

This course is designed to provide students with the knowledge and skills necessary to recognize and communicate the relationships between basic fire regimes and first order fire effects, the effects of fire treatments on first order fire effects, and to maintain fire treatments to achieve desired first order fire effects. This course is based on a National Wildlife Coordinating Group (NWCWG) course: RX-310 Introduction to Fire Effects. **Prerequisites:** FIRE F255 or permission of the instructor. (2+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 F100

#### Skeleton Articulation as an Introduction to Marine Conservation Biology

2 Credits Offered Spring

Course designed for high school students. Graded Pass/Fail. *Prerequisites: GPA of 2.5 or higher; offered to high school juniors and seniors with at least 1 biology and 1 math class completed.* (1+3)

### 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 F102

#### Fact or Fishin': Case Studies in Fisheries

1 Credit Offered Fall

This seminar will promote active learning, critical thinking, and problem solving through a series of case studies involving current issues in fisheries conservation and management. Students enrolled in this course will also receive instruction on fundamental skills required to successfully complete a four-year degree at UAF. Attendance is mandatory. (1+0)

### FISH F103

#### The Harvest of the Sea

2 Credits Offered Spring

This course will explore the scientific and popular literature related to the exploitation of global marine fisheries resources. Specific topics of the course will be based on three core themes: (1) early exploitation of marine resources, leading to the need for fisheries management; (2) overexploitation of fish and marine mammal stocks driven largely by technological advancements culminating from the Industrial Revolution; and (3) the current status and future sustainability of marine fisheries resources. This course is largely discussion based; as a result, weekly attendance and preparation is a critical component of the course. *Prerequisites: FISH F102; FISH F110; placement in ENGL F111X.* (2+0)

### FISH F110

#### Fish and Fisheries in a Changing World

3 Credits Offered Fall

This course is an exploration of the patterns of fish diversity, and the resilience and sustainability that results. The topics that we will cover are intended to act as foundational principles that fisheries resource professionals will use throughout their careers. Together we will examine the complexity of what constitutes a "fishery" and better understand the factors that have led some fisheries to collapse and others to persist. In addition to lectures, students will read, discuss and write extensively and by doing so, can expect to gain better understanding of the "science of sustainability" with regards to 21st century fisheries in Alaska and beyond. (3+0)

### FISH F261

#### Introduction to Fisheries Utilization ☼

3 Credits Offered Fall

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 F116X and FISH F101; 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. Special fees apply. *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 F340

#### Seafood Business

3 Credits Offered Fall

Development and management of a successful seafood business from inception to operation. Practical application of business planning, obtaining financing, accounting, permitting, feasibility analysis, marketing, human resource management, and operational aspects of seafood harvesting and processing using case studies and guest lecturers from seafood industry. *FISH F261; or permission of instructor.* (3+0)

## FISHERIES (FISH)

**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 F213X; F200-level course in cultural anthropology, human geography, sociology, or political science; or permission of instructor.* FISH F611 (3+0)

**FISH F412**      **Human-Environment Research Methods**  
**3 Credits**      Offered Fall  
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: COMM F131X or COMM F141X; ENGL F211X or ENGL F213X; upper level standing; or permission of instructor.* Cross-listed with ANTH F412. Stacked with FISH F613 (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. Special fees apply. *Prerequisites: FISH F101; BIOL F271; or permission of instructor.* (13.3+20)

**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 Even-numbered Years  
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  
This course will provide upper-level undergraduate and graduate students with an advanced understanding of behavioral responses and adaptations of fishes in both freshwater and marine systems to natural and anthropogenic environmental variables. It should provide students another option to fulfill upper-level undergraduate and graduate level elective course work. Before enrolling, students should have a sound understanding of both ecological and biological concepts relating to fishes. *Prerequisites: BIOL F271 or FISH F301 or FISH F427; or permission of instructor. Recommended: FISH F425; 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 F116.* 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 course work. Before enrolling, students should have a sound understanding of both ecological and biological concepts relating to fish. *Prerequisites: FISH F301 or BIOL F310 or FISH/BIOL F427; or permission of the instructor.* Stacked with FISH F628. (3+0)

**FISH F433**      **Pacific Salmon Life Histories**  
**3 Credits**      Offered Spring Even-numbered Years  
This course provides an introduction to the life histories of Pacific salmon. We will explore variation in life history traits within and among species, as well as within and among populations, at each stage of the salmon life cycle. Life histories will be understood in evolutionary and ecological contexts. We will also discuss management and conservation of Pacific salmonid species throughout their range, but with focus on Alaska. This course is taught in Juneau. *Prerequisites: FISH/BIOL F427 or permission of instructor.* Stacked with FISH F633. (3+0)

**FISH F440**      **Oceanography for Fisheries**  
**3 Credits**      Offered Fall Even-numbered Years  
Students examine how understanding the oceanographic processes that determine the distribution, recruitment, and abundance of marine vertebrates and invertebrates from global to local scales and from evolutionary time scales to daily scales supports the sustainable management of marine fisheries resources. *Prerequisites: CHEM F105X, PHYS F103X, FISH F288, STAT F200X. Recommended: FISH F425.* Cross-listed with MSL F440. (3+0)

**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 F251X or MATH F232X; or permission of instructor.* (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 F414; FISH F288; STAT F200X; or permission of instructor.* (3+0)

**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 F492**                    **Seminar**  
**1-6 Credits**  
 (0+0)

**FISH F498**                    **Senior Thesis Proposal**  
**2 Credits**  
 Students will complete the first part of a year-long, self-designed scholarly project that is the capstone of a student's exemplary academic performance. For this component of senior thesis, the student will develop a proposal that will reflect a thorough understanding of the existing literature, study objectives and testable hypotheses, the methodology by which data will be collected through field and/or laboratory research, including data analyses, and a timeline by which the senior thesis will be completed. The student should also complete the collection of field and/or laboratory data and begin data analysis. *Prerequisites: Fisheries major with senior standing; a GPA of 3.2 or higher and permission of a Fisheries Division faculty mentor and the SFOS Internship Coordinator (the coordinator may also be a mentor); STAT F200X and ENGL F414. Recommended: FISH F315; STAT F401 or STAT F402.* (0+0)

**FISH F499**                    **Fisheries Senior Thesis**  
**2 Credits**  
 Students will complete the second part of a year-long, self-designed scholarly project that is the capstone of a student's exemplary academic performance. For this component of senior thesis, the student will complete analysis of field and/or laboratory data collected during FISH F498 and develop a research paper/manuscript that will interpret the study results and cast them within the context of the existing literature relevant to the study topic. Students will be expected to work with their senior thesis mentor to submit the manuscript for peer review to a scientific journal and will be required to present their study results as an oral or poster presentation. *Prerequisites: Fisheries major with senior standing; with a GPA of 3.2 or higher; and permission of a Fisheries Division faculty mentor and the SFOS Internship Coordinator (the coordinator may also be a mentor); FISH F498. Recommended: FISH F315; STAT F401; STAT F402.* (0+0+2-4)

**FISH F601**                    **Quantitative Fishery Science**  
**3 Credits**  
 (2+3)  
 Offered Spring Even-numbered Years

**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 F200X; STAT F401; proficiency in computing with R or permission of instructor.* Cross-listed with MSL F604. (3+3)

**FISH F605**                    **Communicating Science to the Public**  
**2 Credits**  
 Offered Spring Odd-numbered Years  
 In this course, students will gain practical skills in communicating their research to peers and public audiences. Short lectures, readings and discussion will focus on communication issues in environmental science and management and best practices for good oral and written communication. Throughout the semester, students will engage with professionals in science journalism, education and resource management. Students will gain direct experience in communicating science to public audiences through a group outreach event they will co-organize at the culmination of the course. *Prerequisites: Graduate standing in the sciences; or permission of instructor.* (2+0)

**FISH F611**                    **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: Graduate standing, or permission of instructor.* FISH F411 (3+0)

**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 F613**                    **Human-Environment Research Methods**  
**3 Credits**  
 Offered Fall  
 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: Graduate standing or permission of instructor.* Cross-listed with ANTH F613. Stacked with FISH F412 (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 F252X; STAT F401; familiarity with PCs 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 F252X; STAT F401; Familiarity with PCs including word processing and spreadsheets. Recommended: FISH F421; MATH F302; MATH F314.* (2+2.5)

## FISHERIES (FISH)

**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  
This course will provide upper-level undergraduate and graduate students with an advanced understanding of behavioral responses and adaptations of fishes in both freshwater and marine systems to natural and anthropogenic environmental variables. It should provide students another option to fulfill upper-level undergraduate and graduate level elective course work. Before enrolling, students should have a sound understanding of both ecological and biological concepts relating to fishes. *Prerequisites:* BIOL F271 or FISH F301 or FISH F427; or permission of instructor. *Recommended:* FISH F425 or 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 course work. Before enrolling, students should have a sound understanding of both ecological and biological concepts relating to fish. *Prerequisites:* FISH F301 or BIOL F310, FISH/BIOL F427; or permission of instructor and graduate standing. (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)

**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 F200X; STAT F401 or equivalent; FISH F627 (Statistical Computing 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 Spring Even-numbered Years  
This course provides an introduction to the life histories of Pacific salmon. We will explore variation in life history traits within and among species, as well as within and among populations, at each stage of the salmon life cycle. Life histories will be understood in evolutionary and ecological contexts. We will also discuss management and conservation of Pacific salmonid species throughout their range, but with focus on Alaska. This course is taught in Juneau. *Prerequisites:* FISH/BIOL F427 or permission of instructor. Stacked with FISH F433 (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 F641**      **Ecosystem-based Fisheries Management**  
**2 Credits**      Offered Spring Odd-numbered Years  
This course will examine the theory and practice of ecosystem-based fisheries management (EBFM). Topics include legal frameworks, principles, governance, approaches, scientific basis, management implementation and outcomes of EBFM. Emphasis is placed on Alaska with other illustrative examples from around the world. *Prerequisites:* FISH F487; or FISH F640; or graduate standing; or permission of the instructor. (2+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 F645**      **Bioeconomic Modeling and Fisheries Management**  
**3 Credits**      Offered Spring Even-numbered Years  
An introduction to analytic and computational models of discrete-time representations of bioeconomic systems, including comparative static and optimal control approaches to optimizing unitary and multiple criteria subject to deterministic and stochastic dynamic processes. Particular attention is given to bioeconomic models of optimal management of exploited populations of fish and shellfish. *Prerequisites:* STAT F401; MATH F222X or MATH F232X or MATH F251X; graduate standing; or permission of instructor. (3+0)

**FISH F650**      **Fish Ecology**  
**3 Credits**      Offered Spring Odd-numbered Years  
This course will examine the relationship of fishes to the physical, chemical, and biological features of their environment in both perturbed and unperturbed aquatic ecosystems. An emphasis will be placed on fish diversity in terms of morphology, behavior, feeding, and reproductive strategies as they relate to individual and population adaptation, and community structure in both freshwater and marine environments. *Prerequisites:* Permission of instructor. (3+0)

**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 ROVs. 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 F232X or MATH F253X.* (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.* (3+0)

**FISH F665 Aquatic Entomology**  
2 Credits Offered Fall Odd-numbered Years

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 F670 Quantitative Analysis for Marine Policy Decisions**  
3 Credits Offered Spring Odd-numbered Years

An introduction to the practical application of mathematical programming, operations research, simulation, cost-benefit analysis, cost effectiveness analysis, regional impact assessment, economic valuation, risk analysis, adaptive management and other decision theoretic tools in preparation of regulatory documents required for the management of living marine resources and for assessment of environmental damages. *Prerequisites: STAT F401; MATH F222X or MATH F232X or MATH F251X; graduate standing; or permission of instructor.* (3+0)

**FISH F672 Law and Fisheries**  
2 Credits Offered Fall Even-numbered Years

This course introduces students to the key Federal, State and International laws that govern fisheries in Alaska state waters and in the US Exclusive Economic Zone off Alaska. In addition, the course introduces students to seminal court rulings that have helped shape those laws. *Prerequisites: graduate standing or permission of instructor.* (2+0)

**FISH F675 Political Ecology**  
3 Credits Offered Fall Odd-Numbered Years

Introduction to the field of political ecology. Topics include the sociology of scientific knowledge, traditional and local ecological knowledge, politics of resource management, processes of enclosure and privatization, environmental values, conservation, environmental justice, and colonialism and economic development. *Prerequisites: Graduate standing or permission of instructor.* Cross-listed with ANTH F675. (3+0)

**FISH F676 Aquatic Food Web Ecology**  
3 Credits Offered Fall Even-numbered Years

This course will examine theoretical and applied aspects of aquatic food web ecology, from the ecological processes that give rise to patterns in aquatic communities to the incorporation of trophic interactions into ecosystem-based management. Lectures and discussion will focus on ecological theory and case studies. Lab exercises will introduce empirical and modeling approaches for studying food web interactions. Proficiency with Excel and basic statistics is preferred. *Prerequisites: FISH F425 or permission of instructor.* Cross-listed with MSL F676. (2+3)

**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 ANTH F680 and MSL F680. (0+0+5-16)

**FISH F681 The North Pacific Fishery Management Council: A Case Study**  
2 Credits Offered Summer

This two-week intensive course provides immersion into the scientific and policy basis for fisheries management in Alaska. Students receive two days of classroom instruction, review current management issues and witness the decision-making process by attending a North Pacific Fishery Management Council Meeting. Learning is enhanced by discussions with diverse stakeholders and field trips. Graded Pass/Fail. *Prerequisites: Permission of the instructor* (1+0+1)

**FISH F682 Field Course in Salmon Management**  
4 Credits Offered Summer Odd-numbered Years

A hands-on study of salmon management, with participation of harvesters, processors, managers and scientists. Students will track the return of salmon to Bristol Bay and estimate the total return as the runs develop. Consists of a combination of lectures, computer laboratories and field experience in data collection. *Prerequisites: Permission of instructor.* (3+3)

## 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)

**FL F451 Foreign Language Teaching Practicum**  
3 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. Enrollment subject to available classroom placement. *Prerequisites: Completion of FREN F302 or SPAN F302 or RUSS F302 language course or permission of instructor.* (2+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)

## FRENCH (FREN) — GEOGRAPHY (GEOG)

**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 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 F433**      **Studies in French and European Cinema (h)**  
**3 Credits**      Offered Spring or Summer Odd-Numbered Years  
The course discusses the evolution of French and European cinema in historical and artistic contents. *Prerequisites: ENGL F217 or FLM F217; ENGL F211X or ENGL F213X; FREN F301 or FREN F302 or permission of instructor.* Cross-listed with FLM F433. (2+2)

## GENERAL STUDIES

**GENR 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)

**GENR 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)

## 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. (3+0)

**GEOG F111X**      **Earth and Environment: Elements of Physical Geography (n)**  
**4 Credits**  
Introduction to Earth's dynamic environments, systems, and cycles. Major topics 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, and an introduction to remote sensing of patterns on Earth. Special fees apply. *Prerequisites: Placement in ENGL F111X or higher; placement in MATH F151X or higher; or permission of instructor.* (3+3)

**GEOG F202**      **Natural Disasters**  
**3 Credits**      Offered Spring Odd-numbered Years  
Natural disasters are usually the result of the build up and sudden release of energy in the solid earth, atmosphere, or biosphere. Natural "events" typically become disasters when intensive human activity alters the energy dynamics involved, or when the event endangers human life, property, or livelihood. This course examines the natural physical processes that affect the human environment in catastrophic ways. Case studies from around the world, will allow the examination of the complex factors that lead to natural disasters. *Prerequisites: ENGL F111X.* (3+0)

**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 F113X or MATH F151X or permission of instructor.* (3+0)

- GEOG F222 Fundamentals of Geospatial Sciences**  
3 Credits Offered Fall  
This course is an introduction to the principles and applications of geospatial science (remote sensing, GIS and GPS). Fundamental concepts include electromagnetic radiations, map projections, basic computer science, data formats, map-reading and map-making, etc. Practical exercises include field data collections using GPS, photo-interpretation using image processing and GIS software packages. Special fees apply. *Prerequisites: GEOG F111X or GEOS F101X or permission of instructor.* Cross-listed with GEOS F222. (2.5+1.5)
- GEOG F300 Internship in Geography**  
1-3 Credits Offered As Demand Warrants  
Supervised pre-professional experience in a business or agency (public or private). Open to students majoring or minoring in geography only. Course may be repeated for credit up to a maximum of 6 credits. *Prerequisites: GEOG F101X; junior standing with 3.0 GPA; permission of instructor; an approved internship plan.* (0+0+3-10)
- GEOG F302 Geography of Alaska (s)✳**  
3 Credits  
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. (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  
Weather systems and climate classification. Emphasis on weather system processes, measuring weather variables and physical processes of the atmosphere. *Prerequisites: 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 Spring Odd-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 Fall  
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 PCs 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. Special fees apply. *Prerequisites: GEOG F111X; GEOS F304 or permission of instructor.* (3+0 or 3)
- 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)
- 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 F111X; 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: GEOG F307 or ATM F101X or ATM 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 sub-Arctic, polar, and alpine regions. *Prerequisites: BIOL F271 or BIOL/NRM F277; junior/senior standing or permission of the instructor.* Cross-listed with BIOL F418. Stacked with GEOG F618 and BIOL F618. (3+0)

## GEOGRAPHY (GEOG)

**GEOG F420**      **Geopolitics of Energy (s)**  
**3 Credits**      Offered Spring Even-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 Odd-numbered Years  
Comparative physical, cultural, political and economic geography of the Circumpolar North and Antarctic regions. Special attention to Arctic natural resource development, climate change in both polar regions and polar geopolitics. *Prerequisites: GEOG F101 or GEOG F111X; or permission of instructor.* Cross-listed with NORS F427. Stacked with GEOG F627; NORS F627. (3+0)

**GEOG F430**      **Google Earth and Neogeography**  
**3 Credits**      Offered Spring  
Neogeography describes a new generation of primarily web-based mapping techniques and technologies. This course teaches advanced use of some of the latest neogeography tools, such as Google Earth, Maps Engine and Earth Engine. The skills and techniques learned will be applicable in academic, government and industry settings as a way to produce dynamic visualizations from any dataset with a geospatial component, for purposes of data presentation, analysis and research. *Prerequisites: junior standing with completed course work in geographic methods (GEOG F309; F339; GEOS F304; GEOS F422; GEOS F458; NRM F338; NRM F435); 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 F435. (3+3)

**GEOG F454**      **Comparative Farming and Sustainable Food Systems**  
**3 Credits**      Offered Fall  
Principles of food systems geography and food security. Cross-cultural examination of dietary traditions, poverty, hunger, equity and food access and distribution. Comparison of multiple varieties and scales of agricultural systems in the context of social, ecological and economic sustainability. Considers Alaskan and other high-latitude food systems, including country food, wild game harvest and rural to urban nutrition transition. *Junior standing and ENGL F211X or F213X; or permission of instructor.* Cross-listed with NRM F454 and CCS F454. (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 F483 W**      **Research Design, Writing and Presentation Methods**  
**3 Credits**      Offered Fall  
Capstone research seminar for Geography and Natural Resources Management majors. Focuses on designing an individual research project or thesis in coordination with a faculty mentor. Designed to integrate the knowledge and skills students have gained through undergraduate course work, and to prepare them for graduate research or professional level projects. Emphasizes scientific method, research design, proposal writing, development of field and analytical methods, scientific writing, and the oral, written, and graphical presentation of data and research results.

*Prerequisites: ENGL F211X or ENGL F213X; at least one writing intensive course designated (W); junior standing.* Cross-listed with NRM F483. (3+0)

**GEOG F488**      **Geographic Assessment and Prediction of Natural Hazards**  
**3 Credits**      Offered Fall Even-numbered Years  
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 F111X or permission of instructor.* (3+0)

**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 F211X or ENGL F213X; senior standing; or 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 sub-Arctic, polar and alpine regions. *Prerequisites: Graduate standing or permission of instructor.* Cross-listed with BIOL F618. Stacked with GEOG F418 and BIOL F418. (3+0)

**GEOG F627**      **Polar Geography ✳**  
**3 Credits**      Offered Spring Odd-Numbered Years  
Comparative physical, cultural, political and economic geography of the circumpolar north and Antarctic regions. Special attention to Arctic natural resource development, climate change in both polar regions and polar geopolitics. *Prerequisites: Graduate standing; or permission of instructor.* Cross-listed with NORS F627. Stacked with GEOG F427; NORS F427. (3+0)

**GEOG F656**      **Sustainable Livelihoods and Community Well-Being**  
**3 Credits**      Offered Fall  
Review the basic principles that govern the sustainability of systems and look at the cultural practices and individual behaviors that enhance or degrade sustainable livelihoods and community well-being. Emphasis is on understanding the historical context of ideas about sustainability, on understanding the nature and magnitude of the social, economic and ecological dimensions of contemporary change, and the “best practices” currently in place for communities to respond effectively to change. *Prerequisites: Graduate standing or permission of instructor.* Cross-listed with NRM F656 and CCS F656 (3+0)

**GEOG 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 NRM F692. (1-3+0)

**GEOG F692P**      **Graduate Seminar**  
**1-3 Credits**  
Topics in natural resources management and geography explored through readings, student presentations, group discussions and guest speakers. Graded Pass/Fail. *Prerequisites: Graduate standing or permission of instructor.* Cross-listed with NRM F692. (1-3+0)

## GEOLOGICAL ENGINEERING

<b>GE F101</b> 1 Credit	<b>Introduction to Geological Engineering</b> Offered Fall
Multiple aspects of geological engineering as a profession; the area and scope of the field. Graded Pass/Fail. (1+0)	
<b>GE F261</b> 3 Credits	<b>General Geology for Engineers</b> Offered Spring
Study of common rocks and minerals, landforms and erosion. Geologic materials and engineering application of geology. Special fees apply. <i>Prerequisites: MATH F151X; MATH F152X or equivalent; Geology, science or engineering majors; or permission of instructor.</i> (2+3)	
<b>GE F322</b> 3 Credits	<b>Erosion Mechanics and Conservation</b> 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. <i>Prerequisites: ES F341 or permission of instructor.</i> (3+0)	
<b>GE F365</b> 3 Credits	<b>Geological Materials Engineering</b> Offered Fall
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. Special fees apply. <i>Prerequisites: ES F208; GE F261; or permission of instructor.</i> (2+3)	
<b>GE F371</b> 3 Credits	<b>Remote Sensing for Engineering</b> Offered Spring
Applications of remote sensing to geological engineering problems. Introduction to digital satellite image processing with hands-on practice. <i>Prerequisites: PHYS F212X.</i> (2+3)	
<b>GE F375</b> 3 Credits	<b>Principles of Engineering Geology and Terrain Analysis</b> Offered Fall
Evaluation of terrain characteristics using basic geomorphic and engineering principles. Alaskan applications are provided due consideration. <i>Prerequisites: GE F261.</i> (2+3)	
<b>GE F376</b> 3 Credits	<b>GIS Applications in Geological and Environmental Engineering</b> Offered Spring or As Demand Warrants
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. Special fees apply. <i>Prerequisites: GE F261 or equivalent; GE F375 or equivalent. NRM F338 Recommended.</i> (2+3)	
<b>GE F381 W</b> 2 Credits	<b>Field Methods and Applied Design I</b> Offered Summer
Techniques and geologic mapping and geotechnical instrumentation applied to engineering design and resource evaluation. <i>Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; GE F261; GEOS F213; GEOS F214; GEOS F322; GEOS F332 or equivalent.</i> (0+9+3)	
<b>GE F382 W</b> 4 Credits	<b>Field Methods and Applied Design II</b> Offered Summer
Techniques and geologic mapping and geotechnical instrumentation applied to engineering design and resource evaluation. <i>Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; GE F261; GEOS F213; GEOS F214; GEOS F322; GEOS F332 or equivalent.</i> (0+9)	
<b>GE F384</b> 4 Credits	<b>Engineering Geology of Alaska</b> ☼ Offered Summer or As Demand Warrants
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. <i>Prerequisites: Upper-division standing; permission of instructor.</i> (3+1+2)	
<b>GE F400</b> 1-3 Credits	<b>Geological Engineering Internship</b> Offered As Demand Warrants
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. <i>Prerequisites: Upper-division standing; permission of instructor.</i> (1-3+0)	
<b>GE F405</b> 3 Credits	<b>Exploration Geophysics</b> Offered Fall
Theory and application of gravity, magnetic, electrical, electromagnetic, radioactive and seismic methods as used for geophysical exploration. Some field work. Special fees apply. <i>Prerequisites: GE F375; MATH F251X; PHYS F211X or equivalent.</i> (2+3)	
<b>GE F420</b> 3 Credits	<b>Subsurface Hydrology</b> Offered Fall
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. Special fees apply. <i>Prerequisites: GE F365; MATH F302; ES F341; or permission of instructor.</i> Stacked with GE F610. (2+3)	
<b>GE F422</b> 3 Credits	<b>Soil Physics</b> ☼ Offered As Demand Warrants
Fundamentals of soil physics, including soil texture, structure, size distribution, and water retention characteristics; flow of water through saturated and unsaturated soil; soil temperature and heat flow; infiltration, runoff, and evaporation. Processes relevant to active layer dynamics and permafrosts are given due consideration. <i>Prerequisites: CHEM F105X, CHEM F106X; or permission of instructor.</i> (2+3)	
<b>GE F430</b> 3 Credits	<b>Geomechanical Instrumentation</b> Offered Fall
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. <i>Prerequisites: ES F331; GE F261 or GEOS F101X.</i> (2+3)	
<b>GE F435</b> 3 Credits	<b>Exploration Design</b> Offered Spring
Geologic, engineering and economic considerations applied to the design and development of mineral exploration programs. <i>Prerequisites: GEOS F314 or permission of instructor.</i> (3+0)	
<b>GE F440</b> 3 Credits	<b>Slope Stability</b> Offered Fall
Slope design for open pit mining and other excavations. Stability analysis by various methods and on-site measuring and monitoring techniques. <i>Prerequisites: ES F331.</i> (3+0)	
<b>GE F441</b> 3 Credits	<b>Geohazard Analysis</b> Offered Fall
Procedures and techniques to evaluate geological factors for geohazards, such as landslides, earthquakes, volcanoes, flooding, coastal hazards and permafrost-related problems. <i>Prerequisites: GE F365 or equivalent; or permission of instructor.</i> (3+0)	
<b>GE F445</b> 3 Credits	<b>Design of Earth Dams and Embankments</b> As Demand Warrants
Preliminary planning for design and construction of dams, site selection, reservoir assessment, foundation and other building materials, procedure for design of earth dams, design of abutment and spillway, estimation of volume of earthworks and storage capacities, site preparation	

## GEOLOGICAL ENGINEERING (GE) — GEOLOGY AND GEOPHYSICS (GEOS)

for construction, excavation, slope stability issues and other geological engineering assessments. *Prerequisites: senior standing or permission of instructor.* (3+0)

### 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 F371; GE F375; GE F381 or equivalent; GE F382 or equivalent; GE F405; GE F420.* (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. Special fees apply. *Prerequisites: Graduate standing in Engineering or permission of instructor.* Stacked with GE F420. (2+3)

### GE F620 Advanced Groundwater Hydrology 3 Credits

Study of groundwater hydrology with emphasis on solute and contaminant transport, chemical reaction and ion exchange, advection and diffusion and computer modeling. *Prerequisites: GE F610 or equivalent; graduate standing or permission of instructor.* (2+3)

### GE F622 Advanced Soil Physics ☼ 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 geoenvironmental 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 F610 or equivalent course and Graduate standing in Engineering or permission of instructor.* (3+0)

### GE F624 Stochastic Hydrology and Geohydrology 3 Credits

Overview of the stochastic methods used to study and analyze hydrologic and geohydrologic processes. Emphasis on modeling hydrologic 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

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 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 F665 Advanced Geological Materials Engineering 3 Credits

Offered Spring  
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

Offered Fall Odd-numbered Years  
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

Offered Fall Even-numbered Years  
Tunnel design, case histories, student report. *Prerequisites: Graduate standing 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. *Prerequisites: Graduate standing or permission of instructor.* (1+0)

### GE F692P 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 be 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 F105 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.* (3+3)

**GEOS F190      The Geology of Wine**  
2 Credits      Offered Spring

This course explores the relationship between geology, climate, and viticulture. Aspects of geology that influence landscape, soil development and climate are evaluated in reference to their effects on wine-growing regions. The geology, tectonic setting, soil and climate of individual wine-growing areas will be explored through lectures, discussions, class projects/presentations, and lab wine tastings. Graded Pass/Fail. Special fees apply. *Prerequisites: Student must be 21 years of age to enroll.* (1.5+0.5)

**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 F151X.* (2+6)

**GEOS F214      Petrology and Petrography (n)**  
4 Credits      Offered Spring

Origin, occurrence and classification of igneous and metamorphic rocks. Laboratory work involves hand lens identification and thin section examination of representative rocks. Special fees apply. *Prerequisites: GEOS F213.* (2+6)

**GEOS F222      Fundamentals of Geospatial Science**  
3 Credits      Offered Fall

This course is an introduction to the principles and applications of geospatial science (remote sensing, GIS and GPS). Fundamental concepts include electromagnetic radiations, map projections, basic computer science, data formats, map-reading and map-making, etc. Practical exercises include field data collections using GPS, photo-interpretation using image processing and GIS software packages. *Prerequisites: GEOG F111X or GEOS F101X or permission of instructor.* Cross-listed with GEOG F222. (2.5+1.5)

**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. *Co-requisites: GEOS F214; or GEOS F262.* (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. 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 F309 W      Tectonics**  
3 Credits      Offered Fall

In-depth exploration of the theory of Plate Tectonics including plate boundary interactions — which trigger volcanoes and earthquakes, form mountain belts and oceans — via geochemistry, sedimentology, geophysics and structure. Understanding the creation and evolution of the lithosphere and mantle, how we detect tectonic processes and how present tectonic environments help reconstruct ancient crustal events. *Prerequisites: ENGL F211X or ENGL F213X; GEOS F112; GEOS F214 or GEOS F262 (either may be taken concurrently).* (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 F317 O      Paleontological Research and Laboratory Methods**  
2 Credits      Offered Spring Even-numbered Years

Introduction to the research methods in paleontology. This course covers the fundamentals of fossil preparation, digital techniques for imaging and analyzing paleontological data, and discusses the current theory and practice of curation of fossil material in a museum setting. Common techniques for presenting research results to a scientific and public audience are also covered, with an emphasis on oral presentations. Labs emphasize practical experiences in the methods and presentation of research. *Prerequisites: GEOS F101 and GEOS F112X or permission of the instructor.* (1+3)

**GEOS F318      Solid Earth Geophysics**  
3 Credits      Offered Alternate 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 and magnetic methods are discussed along with measurements of the Earth's thermal structure, rotation rates, and tidal effects. *Prerequisites: MATH F251X; PHYS F104X; or permission of instructor.* (3+0)

## GEOLOGY AND GEOPHYSICS (GEOS)

### GEOS F320 Sedimentology for Geological Engineers 3 Credits

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. Not intended for geoscience majors and does not substitute for GEOS F322. Special fees apply. Special fees apply. *Co-requisites: GEOS F213.* (2+3)

### GEOS F322 Stratigraphy and Sedimentation (n) 4 Credits

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 F330 The Dynamic Alaskan Coastline 3 Credits

Mountains, rivers, glaciers, fjords, estuaries, deltas, tidal zones, sediments, nutrients, elements, habitats, fish. This class will provide an interdisciplinary perspective on the dynamic Alaskan coastal landscape from Glacier Bay to the Arctic. We will delve into the driving geological, geochemical, and oceanographic processes occurring along Alaska's coast and linkages to various marine ecosystems. Students will learn the fundamental physical and geochemical processes in the coastal zone using various locations in Alaska as examples. Field trip required. Special fees apply. *Prerequisites: Junior standing; MSL F111X or GEOS F101; CHEM F105X; PHYS F103X or PHYS F211X.* (3+0)

### GEOS F332 Ore Deposits and Structure 3 Credits

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 GEOS F214; or permission of instructor.* (1+6)

### GEOS F351 W Field Geology (n) 8 Credits

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

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 F380 Geological Hazards 3 Credits

Survey of natural hazards and the disasters they cause, with emphasis on geological hazards in Alaska. Investigation of hazardous phenomena, prediction and mitigation. Topics to include: earthquakes, volcanoes, tsunamis, weather/climate, and asteroid impacts. Provides a foundation in basic geological hazards related to science, suitable for use in teaching, communications, policy and emergency management careers. *Prerequisites: GEOS F101X or GEOS F120X or GEOS F160X or permission of instructor.* (3+0)

### GEOS F401 Invertebrate Paleontology (n) 3 Credits

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

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

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 F417 Introduction to Geochemistry 3 Credits

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)

### GEOS F421 Sedimentology 3 Credits

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

Remote sensing and its applications to geologic, environmental and physical sciences. Includes physical principles, digital image processing and hands-on project experience using satellite images for mapping and change detection. Course is not available for audit. *Prerequisites: GEOS/GEOG F222 or permission of instructor.* (2+3)

### GEOS F428 Elementary Scanning Electron Microscopy 1 Credit

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 F431**      **Foundations of Geophysics**  
**4 Credits**      Offered Fall

Applications of continuum mechanics, heat flow theory, and potential theory to geophysical, geologic and glaciological problems. Topics such as postglacial rebound, non-Newtonian fluid flow, thermal convection, stress-relaxation, rheology of earth materials, gravity, and magnetism will be discussed. 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:* **GEOS F318, MATH F302, and MATH F314 or permission of instructor.** Stacked with GEOS F631. (3+3)

**GEOS F436**      **Beyond the Mouse: Computer Programming and Automation for Geoscientists**  
**2 Credits**      Offered Fall

Basic concepts of computer programming and effective automation of tasks using a computer, with an emphasis on tools and problems common to the geosciences and other physical sciences. Use of MATLAB, shell scripting and various command line tools for data analysis, making scientific figures, maps and visualizations. Graded Pass/Fail. *Prerequisites:* **Senior standing or permission of the instructor.** Stacked with GEOS F636. (1+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 F445**      **Petroleum Geology**  
**3 Credits**      Offered Fall Even-numbered Years

Examines the origin of petroleum, the geologic controls of its distribution and accumulation and the basic tools used in exploration and exploitation, including subsurface mapping, well logging and exploration geophysics. *Prerequisites:* **GEOS F314 and GEOS F322 or permission of the instructor.** Cross-listed with PETE F645. Stacked with GEOS F645. (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 GEOS F111 or NRM F380 or permission of instructor.** Stacked with GEOS F656. (3+0)

**GEOS F458**      **Applications of GPS and GIS in Geophysics (n)**  
**3 Credits**      Offered Spring

Application of Geographic Information Systems (GIS) to geospatial problems in volcanology, glaciology, environmental mapping and other geophysical disciplines. Landscape classification, linear regression modeling, and manipulation of geodatabases using ESRI's ArcGIS software. Use of model builder and Python scripting to automate geospatial processing. Hands-on experience with recreational, mapping and survey-grade GPS receivers. Differential correction of GPS solutions using real-time and post-processing methods. Course is not available for audit. *Prerequisites:* **GEOS/NRM F338 or equivalent; or permission of instructor** 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 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 F477 O**      **Ice in the Climate System**  
**3 Credits**      Offered Spring Even-numbered Years

Earth's cryosphere includes seasonal snow, permafrost, sea ice, mountain glaciers and ice sheets. This course will cover the formation of each of these forms of snow and ice and their response to changing environmental conditions. Interdisciplinary perspectives allow study of the role snow and ice plays within the Arctic system (including atmosphere, ocean and ecosystems), with an emphasis on Alaska. The cryosphere will also be placed in context of the global climate system. Oral intensive will include instructor and peer feedback. *Prerequisites:* **PHYS F103X or PHYS F211X; MATH F251X; or permission of instructor.** (2+3)

**GEOS F482**      **Geoscience Seminar**  
**1 Credit**

A weekly seminar, given by guest speakers, on a topic in geosciences. Students are expected to complete written summaries of the seminars. Graded Pass/Fail. Stacked with GEOS F682. (1+0)

**GEOS F485**      **Mass Extinctions, Neocatastrophism and the History of Life**

**3 Credits**      Offered Spring Odd-Numbered Years

In-depth analysis of the literature regarding mass extinction, focusing on evidence for catastrophes and impact on the uniformitarian paradigm. Effects of mass extinctions on the evolutionary history of extant and fossil animals and plants will be explored through readings from classic and current literature in paleontology. The course will emphasize critical reading and application of scientific methods to reconstruction of geologically rapid events in deep time. *Prerequisites:* **GEOS F322 and GEOS F315W, or permission of instructor.** (3+0)

## GEOLOGY AND GEOPHYSICS (GEOS)

**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 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 F499 Geology and Geophysics Senior Thesis**  
**3 Credits**  
This course is intended for talented students to explore geology or geophysics more deeply through research under the mentorship of a faculty member in the department. *Prerequisites: Geology and Geophysics major with senior standing and a GPA of 3.2 or higher, completion of a minimum of 2 credits of GEOS F488 on a project approved by faculty mentor and department chair, and submission of a proposal approved by faculty mentor and department chair.* (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 F604 Seismology**  
**3 Credits** Offered Spring Odd-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 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)

<p><b>GEOS F620</b>      <b>Geodynamics</b>  <b>3 Credits</b>      Offered Fall Even-numbered Years</p> <p>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. <i>Prerequisites: MATH F421 and MATH F422 and permission of instructor; OR graduate standing.</i> (3+0)</p>	<p><b>GEOS F631</b>      <b>Foundations of Geophysics</b>  <b>4 Credits</b>      Offered Fall</p> <p>Applications of continuum mechanics, heat flow theory, and potential theory to geophysical, geologic and glaciological problems. Topics such as postglacial rebound, non-Newtonian fluid flow, thermal convection, stress-relaxation, rheology of earth materials, gravity, and magnetics will be discussed. 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. <i>Prerequisites: Graduate standing. Recommended: GEOS F318; MATH F302; MATH F314.</i> Stacked with GEOS F431. (3+3)</p>
<p><b>GEOS F621</b>      <b>Advanced Petrology</b>  <b>4 Credits</b>      Offered As Demand Warrants</p> <p>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. <i>Prerequisites: Graduate standing; permission of instructor.</i> (3+3)</p>	<p><b>GEOS F633</b>      <b>Environmental Geochemistry</b>  <b>3 Credits</b>      Offered Spring Odd-numbered Years</p> <p>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 heterogeneous interactions, including dissolution/precipitation, sorption and microbial processes, involved in the partitioning, transformation and transport of chemical species in the environment. <i>Prerequisites: ENVE F641 or GEOS F618 or permission of instructor.</i> Cross-listed with CHEM F609. (3+0)</p>
<p><b>GEOS F622</b>      <b>Digital Image Processing in the Geosciences</b>  <b>3 Credits</b>      Offered Fall Odd-numbered Years</p> <p>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)</p>	<p><b>GEOS F635</b>      <b>Advanced Economic Geology</b>  <b>1-4 Credits</b>      Offered As Demand Warrants</p> <p>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. <i>Prerequisites: Graduate standing or permission of instructor.</i> (1-4+0-3)</p>
<p><b>GEOS F626</b>      <b>Applied Seismology</b>  <b>4 Credits</b>      Offered Spring Even-numbered Years</p> <p>Presentation of modeling techniques for earthquakes and Earth structure using wave propagation algorithms and real seismic data. Covers several essential theories and algorithms for applications in seismology, as well as the basic tools needed for processing and using recorded seismograms. Topics include the seismic wavefield (body waves and surface waves), earthquake moment tensors, earthquake location and seismic tomography. Assignments require familiarity with vector calculus, linear algebra and computational tools such as Matlab. <i>Prerequisites: MATH F253X; MATH F314; or permission of instructor.</i> (3+3)</p>	<p><b>GEOS F636</b>      <b>Beyond the Mouse: Computer Programming and Automation for Geoscientists</b>  <b>2 Credits</b>      Offered Fall</p> <p>Basic concepts of computer programming and effective automation of tasks using a computer, with an emphasis on tools and problems common to the geosciences and other physical sciences. Use of MATLAB, shell scripting and various command line tools for data analysis, making scientific figures, maps and visualizations. Graded Pass/Fail. <i>Prerequisites: Graduate standing.</i> Stacked with GEOS F436. (1+3)</p>
<p><b>GEOS F627</b>      <b>Inverse Problems and Parameter Estimation</b>  <b>3 Credits</b>      Offered Spring Odd-numbered Years</p> <p>An inverse problem uses observations to infer properties of an unknown physical model. One example is how seismometer recordings can be used to infer the location of an earthquake. This course covers inverse theory and methods for solving inverse problems, including numerous examples arising in the natural sciences. Topics include linear regression, method of least squares, discrete ill-posed inverse problems, estimation of uncertainties, iterative optimization, and probabilistic (Bayesian) and sampling approaches. Assignments and computational laboratory exercises require familiarity with linear algebra and computational tools such as Matlab. <i>Prerequisites: MATH F253X; MATH F314; or permission of instructor.</i> Cross-listed with PHYS F625. (2+3)</p>	<p><b>GEOS F637</b>      <b>Rock-Forming Minerals</b>  <b>4 Credits</b>      Offered Spring Odd-numbered Years</p> <p>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. <i>Prerequisites: GEOS F417 and permission of instructor; OR graduate standing.</i> (3+3)</p>
<p><b>GEOS F628</b>      <b>Elementary Scanning Electron Microscopy</b>  <b>1 Credit</b>      Offered Spring</p> <p>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. <i>Prerequisites: Graduate standing or permission of instructor.</i> Stacked with GEOS F428. (0.5+1.5)</p>	<p><b>GEOS F638</b>      <b>Basin Analysis</b>  <b>3 Credits</b>      Offered Spring Odd-numbered Years</p> <p>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. <i>Prerequisites: Graduate standing or permission of instructor.</i> Stacked with GEOS F438. (3+0)</p>
<p><b>GEOS F629</b>      <b>Geologic Hazards and Natural Disasters</b>  <b>3 Credits</b>      Offered Spring Odd-numbered Years</p> <p>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. <i>Prerequisites: Graduate standing or permission of instructor.</i> (3+0)</p>	<p><b>GEOS F639</b>      <b>InSar and its Applications</b>  <b>3 Credits</b>      Offered As Demand Warrants</p> <p>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. <i>Prerequisites: Basic remote sensing course or permission of instructor.</i> Cross-listed with PHYS F639. (2+2)</p>

## GEOLOGY AND GEOPHYSICS (GEOS)

- 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 F645**      **Petroleum Geology**  
**3 Credits**      Offered Fall Even-numbered Years  
Examines the origin of petroleum, the geologic controls of its distribution and accumulation and the basic tools used in exploration and exploitation, including subsurface mapping, well logging and exploration geophysics. *Prerequisites: Graduate standing or permission of the instructor.* Cross-listed with PETE F645. Stacked with GEOS F445. (0+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)
- 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 permission of instructor.* (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**      **Applications of GPS and GIS in Geophysics**  
**3 Credits**      Offered Spring  
Application of Geographic Information Systems (GIS) to geospatial problems in volcanology, glaciology, environmental mapping and other geophysical disciplines. Landscape classification, linear regression modeling, and manipulation of geodatabases using ESRI's ArcGIS software. Use of model builder and Python scripting to automate geospatial processing. Hands-on experience with recreational, mapping and survey-grade GPS receivers. Differential correction of GPS solutions using real-time and post-processing methods. Course is not available for audit. *Prerequisites: Graduate standing or permission of instructor.* 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 F666**      **Scientific Teaching**  
**2 Credits**      Offered Spring Even-numbered Years  
This course explores methods for teaching science at the university level. Emphasis is placed on methods of course design, instructional techniques, assessment and course management that have been shown by research to improve student learning. This course is intended for graduate students in the sciences who have an interest in improving their teaching skills. The course format will be a mixture of discussion, workshops and seminars. If the course is over-enrolled, priority will be given to teaching assistants who are assigned to teach large, introductory level (100 or 200 level) courses during the semester they are taking this course. *Prerequisites: Graduate standing or permission of the instructor.* Cross-listed with STO F666, CHEM F666, BIOL F666. (2+0)

**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**      **Geoscience Seminar**  
**1 Credit**  
 A weekly seminar, given by guest speakers, on a topic in geosciences. Students are expected to prepare for the seminars and to participate in discussion following the seminars. Graded Pass/Fail. *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: Graduate standing 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 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 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)

## 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 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)

## HEALTH (HLTH)

### 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; Accuplacer reading score of 65 or permission of instructor. Student must be in good physical condition and have the following immunizations: Chickenpox, Hepatitis B series, two MMRs, a PPD two-step testing process within previous 12 months of the clinical component of class.* (5+8)

### 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. Course 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:** *Documentation of the following vaccines: Hepatitis B series, two MMRs, two chickenpox and a two-step PPD, or proof of immunity to MMR, Chickenpox, Hepatitis and a two-step PPD, high school graduation or GED or Accuplacer reading comprehension score of 65 or above, or permission of instructor. 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.* (4+0)

### 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 F054; or placement in DEVM F055 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 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. Special fees may apply. (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; HLTH F122 or current First Aid and CPR. Documentation of positive antibody titer for hepatitis B; current immunizations for measles, mumps, rubella, hepatitis A, varicella and tetanus; negative TB test within the past year and departmental approval.* (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. (3+0)

### HLTH F207 Medication Aide Course 6 Credits

Basic pharmacology and medication administration for certified nurse aides and personal care attendants. Includes drug delivery routes, classifications, effects and side effects. Communication principles, ethics, nursing process, and body structure and function will be reviewed. This course prepares the CNA to assist the RN or LPN to pass medications in health care settings as approved by the Alaska Board of Nursing and to sit for the National Council State Board of Nursing Medication Aide Certification Exam. The CNA student is not required to sit for the NCSBN MA Examination to pass the course. It will prepare the PCA to assist in the delivery of medications in ALH and private homes. **Prerequisites:** *Current license as a CNA or PCA by the State of Alaska, have at least one full year of experience as a CNA/PCA, supply three letters of reference from healthcare professionals, Accuplacer math score of 48 or higher, be 18 years of age or older, be immunized as required by the training site/facility.* (4+4)

### HLTH F208 Human Diseases 3 Credits

Offered Fall and Spring

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 with a C- or higher 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 ICD 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)

**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 HIPAA 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

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 F142; HLTH F122 or current First Aid and CPR. Documentation of positive antibody titer for hepatitis B, current immunizations for measles, mumps, rubella, hepatitis A, varicella and tetanus; negative TB test within the past year and departmental approval. (3+2)

**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 F255 Phlebotomy Principles, Methods and Externship**  
5 Credits

This comprehensive lecture, lab, and externship course is designed to provide information covering phlebotomy technique, anatomy and physiology as it pertains to venipuncture, and lab testing. Quality control, quality assurance, universal precautions, and OSHA regulations will be reviewed. Specimen collection and proper specimen handling is an essential segment of successfully completing this course. This course includes 100 hours of practical experience. Upon completion, the student will have satisfied the educational requirements for national phlebotomy certification by the American Society of Clinical Pathologists. Special fees apply. *Prerequisites:*

HLTH F122 or current First Aid and CPR cards; Accuplacer reading comprehension score of 65 or above; DEVM F055. Documentation of positive antibody titer for hepatitis B, current immunizations or titers to measles, mumps, rubella, varicella, flu shot and two step PPD with the past year. Other specific immunizations as required by the externship sites. (2+1+7)

**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 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 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 A.A.S. 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)

## HIGH LATITUDE RANGE MANAGEMENT (HLRM) — HISTORY (HIST)

**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)

**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 F113X; 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. *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. (3+0)

**HIST F102 Western Civilization** (s)  
**3 Credits** Offered Spring  
Major political, economic, social and intellectual developments of western civilization since 1500. (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 its 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. (3+0)

**HIST F132 History of the U.S.** (s)  
**3 Credits** Offered Spring  
From the reconstruction to the present. (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 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)

- 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. (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. (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. (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. (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. (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. (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 F213X; 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 counter-culture, 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. Available via eLearning & Distance Education only. Cross-listed with JRN F368 and FLM 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. (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. (3+0)
- HIST F404 W**      **Modern Scandinavia (s)**☼  
**3 Credits**      Offered Spring Odd-numbered Years  
 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. (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. (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. 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)

## HISTORY (HIST)

**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. 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. (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. *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. (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. (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. Stacked with HIST F662; NORS F661. (3+0)

**HIST F463**      **Imperial Russia, 1700-1917 (s)✳**  
**3 Credits**      Offered Fall Odd-numbered Years  
This course covers Russian history from the reign of Peter the Great (1682-1725) until the collapse of the Tsarist regime in February 1917. Topics will include Russia's complex relationship with Western Europe, the challenges posed by modernization, and the emergence of the revolutionary movement. Stacked with HIST F663; NORS F663. (3+0)

**HIST F464**      **Soviet and Post-Soviet Russia (s)✳**  
**3 Credits**      Offered Fall Even-numbered Years  
Russia from the 1917 Revolution to the present. This course examines the attempts to build a socialist utopia in the former Russian empire and its impact on the peoples of that region and the modern world. We will consider the political, economic, social, and cultural nature of the Soviet state. Major themes include cultural transformation, industrialization, Stalinism, the Soviet Union as a multi-national empire, the Cold War, the collapse of the Soviet state, and the new Russia of Yeltsin and Putin. 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 governance 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 Capstone (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 Capstone (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)

**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. 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. 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. 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 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. Cross-listed with NORS F661. Stacked with HIST F461. (3+0)

**HIST F663 Imperial Russia, 1700-1917** ✨  
**3 Credits** Offered Fall Odd-numbered Years  
 This course covers Russian history from the reign of Peter the Great (1682-1725) until the collapse of the Tsarist regime in February 1917. Topics will include Russia's complex relationship with Western Europe, the challenges posed by modernization, the Russian Empire as a multinational state, and the emergence of the revolutionary movement. *Prerequisites: Graduate standing or permission of instructor.* Cross-listed with NORS F663. Stacked with HIST F463. (3+0)

**HIST F664 Soviet and Post-Soviet Russia** ✨  
**3 Credits** Offered Fall Even-numbered Years  
 Russia from the 1917 Revolution to the present. This course examines the attempts to build a socialist utopia in the former Russian empire and its impact on the peoples of that region and the modern world. We will consider the political, economic, social, and cultural nature of the Soviet state. Major themes include cultural transformation, industrialization, Stalinism, the Soviet Union as a multi-national empire, the Cold War, the collapse of the Soviet state, and the new Russia of Yeltsin and Putin. *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** 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 historical sources of this effort. *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

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 students enrolling in one or more School of Management courses (ACCT, AIS, BA, ECON, HSEM, LEAD, or MBA) excluding ECON F100X. This fee is in addition to any material fees.

**HSEM F120 Introduction to Emergency Management**  
**3 Credits** Offered As Demand Warrants  
 This course will introduce students to the vocabulary and core components of emergency management. The importance of this growing field will be discussed. The field is changing rapidly as a result of an increase in frequency, complexity and severity of man-made, natural and technological disasters. Historical events that have changed the nature of the field will be examined and students will be introduced to the leadership and management roles that have emerged as a result of these events taking place. (3+0)

**HSEM F121 Introduction to Homeland Security**  
**3 Credits** Offered As Demand Warrants  
 This course will introduce students to the vocabulary and important components of homeland security. We will discuss the importance of the agencies associated with homeland security and their interrelated duties and relationships. Historical events that affect homeland security will be examined. State, national and international laws affecting homeland security will be

explored. The most critical threats confronting homeland security will be examined. (3+0)

**HSEM F223 Terrorism: A Global Threat**  
**3 Credits** Offered As Demand Warrants  
 This course will investigate the historical origins of global terrorism, the major contemporary terrorist organizations (foreign and domestic), their ideological motivations and their methodologies for employing terror. It will also explore the threats posed to the United States and the West in terms of national security and the economy. An in-depth examination and evaluation of several case studies of terrorist acts will be made. The primary focus of this course will be on terrorist organizations and their acts of terror. *Prerequisites: HSEM F120 or HSEM F121.* (3+0)

**HSEM F225 Intelligence Analysis and Security Management**  
**3 Credits** Offered As Demand Warrants  
 This course will examine the history of intelligence gathering and espionage in the United States. A succinct study and comparative analysis of intelligence collection methods of other nations will also be made. An in-depth study of key U.S. intelligence agencies, their collection methodologies, and their effect upon national security will be examined. *Prerequisites: HSEM F120 or HSEM F121.* (3+0)

**HSEM F227 Transportation and Border Security**  
**3 Credits** Offered As Demand Warrants  
 This course provides an overview of modern border and transportation security challenges, as well as different methods employed to address these challenges. The time period from post 9-11 to the present is covered. Topics explored include those associated with border and transportation infrastructure security; seaports, ships, aircraft, airports, trains, train stations, trucks, highways, bridges, rail lines, pipelines and buses. The course will include an exploration of technological solutions employed to enhance security of borders and transportation systems. Discussions will include such topics as the legal, economic, political and cultural concerns and impacts associated with transportation and border security. *Prerequisites: HSEM F120 or HSEM F121.* (3+0)

**HSEM F231 The Threat of Weapons of Mass Destruction**  
**3 Credits** Offered As Demand Warrants  
 In a post 9/11 environment, concerns surrounding the potential use of weapons of mass destruction have been an ever increasing concern. This course is intended to serve as an introduction to the study and history of weapons of mass destruction as a tool of terrorism. *Prerequisites: ENGL F111X; or permission of instructor.* (3+0)

**HSEM F233 Critical Infrastructure Protection**  
**3 Credits** Offered As Demand Warrants  
 This course provides tools and techniques to students who desire to increase their knowledge, skills and abilities in the protection of critical infrastructure elements. The course focuses on the predominant infrastructure sectors such as water, energy, SCADA, power, telecommunications, internet and cyber infrastructure. *Prerequisites: HSEM F120 or HSEM F121.* (3+0)

**HSEM F271 Fiscal Management for Emergency Management Operations**  
**3 Credits** Offered Fall  
 This course is about accounting for public organizations such as fire, police and similar functions of local governments. Accounting is an essential function in all organizations. This course is from a user's perspective—understanding accounting reports rather than preparing them. The major topics covered include: understanding financial reports, budgeting preparation, governmental accounting basics, grant writing and management and ethics. *Prerequisites: Sophomore standing or higher; placement, concurrent enrollment or completion of MATH at the F100-level or above.* Cross-listed with ACCT F271. (3+0)

## HOMELAND SECURITY AND EMERGENCY MANAGEMENT (HSEM)

### 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. Special fees apply. *Prerequisites: MATH F113X; or MATH F151X; or MATH F122X.* (3+0)

### HSEM F405 Introduction to Emergency Management Exercise Design

3 Credits Offered As Demand Warrants

This course examines exercise design, evaluation, and development. The course will focus on developing the knowledge and skills that are imperative to implementing a Homeland Security Exercise Evaluation Program (HSEEP) compliant exercise. The class will also design and develop a table top exercise to be executed as a class project at the end of the semester. Lastly, the course will emphasize the importance of incorporating emergency exercise planning to effectively prepare and respond to disasters of all types and magnitudes. Special fees apply. *Prerequisites: ENGL F211X or F213X; HSEM F301; or permission of instructor.* (3+0)

### HSEM F406 Comparative Homeland Security

3 Credits Offered As Demand Warrants

The purpose of this course is to help students develop an understanding of the homeland security and counterterrorism methods utilized by other countries. To achieve this goal, the course will examine several different countries and compare the policies and strategies they have developed to protect their citizens from unique global threats. This course will help broaden student understanding of homeland security in today's global environment. Special fees apply. *Prerequisites: ENGL F211X or F213X; HSEM F301; or permission of instructor.* (3+0)

### HSEM F407 Comparative Emergency Management

3 Credits Offered As Demand Warrants

This course will focus on examining regional and global responses to various types of disasters. Topics covered will include the importance of regional collaboration between nations in disaster preparedness, mitigation, response, and recovery. Additionally, the roles that regional partnerships play in disaster mitigation will be examined, as well as issues concerning the requirements to sustain collaborative efforts between nations in the 21st century. Special fees apply. *Prerequisites: ENGL F211X or F213X; HSEM F301; or permission of instructor.* (3+0)

### HSEM F408 Homeland Defense and Security

3 Credits Offered As Demand Warrants

The purpose of this course is to provide students with an overview of the categories of military operations (other than war) that require homeland defense and security. A comparative approach will be utilized to compare the U.S. with other countries which use their respective militaries for smaller scale contingencies both internal and external to their borders. Special fees apply. *Prerequisites: ENGL F211X or F213X; HSEM F301; or permission of instructor.* (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. Special fees apply. *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. Special fees apply. *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). Special fees apply. *Prerequisites: HSEM F301 or permission of instructor.* (3+0)

### HSEM F439 Supervising Emergency Services

3 Credits

This course is intended for upper division students not yet working in the emergency services field as well as seasoned fire officers seeking a structured examination of issues relating to supervision of firefighters and emergency environment. Topics includes a review of federal laws, labor relations, coaching, counseling and disciplinary action, managing conflict, motivation, stress management, time management and group dynamics. This course will be conducted in seminar format using a flipped classroom approach, in which most content is presented between class sessions and synthesis of information occurs during facilitated class discussions. This course aligns with the National Fire Academy Fire and Emergency Services Higher Education model core curriculum. Special fees apply. *Prerequisites: HSEM F301; or permission of instructor.* (3+0)

### HSEM F440 Advanced Principles of Fire Service Administration

3 Credits

The class will build a strong base of knowledge for upper-division students not yet working in the emergency services field as well as appeal to seasoned chief fire officers. Topics include community risk management, strategic planning, labor relations, leadership and visioning, managing change, politics, organizational culture and data analysis. This course aligns with the United States Fire Administration (USFA) Fire and Emergency Services Higher Education Curriculum. Special fees apply. *Prerequisites: HSEM F301; or permission of instructor.* (0+0)

### HSEM F445 W,O/2 Business Continuity and Crisis Management

3 Credits Offered As Demand Warrants

The course serves as an introduction to crisis management and organizational continuity from a private sector business crisis and continuity management partnership perspective. The topics include comprehensive emergency 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. Special fees apply. *Prerequisites: ENGL F111X; ENGL F211X or F213X; COMM F131X or F141X; HSEM F301 or AIS F310 or F316 or BA F360 or permission of instructor.* (3+0)

### HSEM F456 W Leadership in Dangerous Contexts

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. Special fees apply. *Prerequisites: HSEM F301; ENGL F111X or ENGL F211X or ENGL F213X; or permission of instructor.* Cross-listed with LEAD F456. (3+0)

**HSEM F601      Legal Aspects of Homeland Security and Emergency Management**

**3 Credits**

Offered Fall

Homeland security and emergency management (HSEM) are heavily regulated by US Code, executive agency guidelines and various federal and state laws and regulations. Participants in emergency planning and execution, are, themselves, subject to myriad laws and regulations while executing their response functions but also in the way they coordinate and interact with other responders whose authorities may differ from their own. This course examines the applicable statutory, regulatory and policy aspects regulating HSEM. It begins with an overview of the Constitution, separation of powers and federalism- the foundation that defines the legal basis for federal, state, tribal and local action before, during and after emergency and contingency management. With this background, the course focuses on relevant statutes such as the Stafford Act, the Economy Act Insurrection Act, Posse Comitatus Act, and those relating to governmental and individual liability/ defenses while performing emergency and contingency management. Special fees apply. *Prerequisites: Must be admitted to the MSDM program; or permission of the MSDM program director.* (3+0)

**HSEM F603      Disaster Management Policy**

**3 Credits**

Offered Fall

This course will provide context for and contemporary coverage of the fields of disaster management and homeland security. Emphasis will be placed on the role of persons at all levels; federal, state and local. This can include scientists, engineers, civil and military, elected/appointed officials and first responders. The course will explore how social science research can be usefully applied to policy development and everyday practice. Students will discuss and review public policy, organizational management and leadership issues they will face as future practitioners and leaders in the field. Special fees apply. *Prerequisites: Must be admitted to MSDM program; or permission of the MSDM program director.* (3+0)

**HSEM F605      Community Planning in Emergency Management**

**3 Credits**

Offered Spring

This course will teach students how community and urban planning principles affect the homeland security and emergency management enterprise. This class is designed with both the traditional emergency manager and urban/community planner in mind to provide a wider perspective as to the larger considerations of urban and community planning in the planning of preparedness. Students will be taught the application of urban community planning methodologies, policies, programs and activities in the context of emergency management. This is an advanced class with the assumption that students have a foundational understanding of basic emergency management and/or homeland security. Special fees apply. *Prerequisites: Must be admitted to the MSDM program; or permission of MSDM program director.* (3+0)

**HSEM F607      Vulnerability and Protection**

**3 Credits**

Offered Fall

This course examines security as a discipline and responsibility. The key focus of security is the protection of assets, whether in the public or private sector. It also includes management principles and concepts that practitioners can use to develop defensible and resilient operations, communities and businesses. The course explores the relationship of security to vulnerability and its role in the overall management of risk. It delves into the functions and responsibilities of security practitioners in public and private organizations, and broaches key aspects of institutional security concerns, including control of access, terrorist attack, critical infrastructure protection, insider threats and workplace violence. The course touches on the evolving nature of the homeland security enterprise and of protective concerns within a global context. Special fees apply. *Prerequisites: Must be admitted to the MSDM program; or permission of MSDM program director.* (3+0)

**HSEM F609      Human Security**

**3 Credits**

Offered Summer

This course introduces and reviews the major elements of human security. The term 'human security' provides a human-centric approach to understanding, enhancing and sustaining the security of the individual, as well as our families, communities and nation. A human-centric framework shifts

the lens from viewing man-made and natural security challenges — such as 9/11, the Boston Marathon bombing, Hurricane Katrina, and Avian Flu and Ebola — as event- or government-centric. Students will examine traditional security influencers, such as public and mental health, climate change, population and pathogen migration, side by side with traditional national and homeland security. The essential question addressed in this course: by focusing on people as the core — holistically, in terms of cause, effect and a change-agents — do people become solution-enablers rather than objects demanding security and response resources? Special fees apply. *Prerequisites: Must be admitted to the MSDM program; or permission of MSDM program director.* (3+0)

**HSEM F613      International Disaster Management**

**3 Credits**

Offered As Demand Warrants

This course serves as an overview to international disaster management (IDM) addressing the complex and interrelated issues of disasters in a global context. The course will explore historical, socio-economic, risk, hazard, response, preparedness and recovery aspects of international disasters. Special emphasis will be placed on the understanding of those organizations and agencies which play a prominent role in the international disaster management arena. Special fees apply. *Prerequisites: Must be admitted to the MSDM program; or permission of the MSDM program director.* (3+0)

**HSEM F632      Project Management**

**3 Credits**

Offered As Demand Warrants

This course is designed to cover key components of project management fundamentals with emphasis on the project life cycle, project definition, project schedule and cost management, human resource allocation and the challenges facing project managers in every industry. We will focus on concepts, theories and best practices, while discussing managing and leading project teams in complex environments. Special fees apply. *Prerequisites: Must be admitted to the MSDM or MBA program; or permission of MSDM or MBA program director.* Cross-listed with MBA F632. (3+0)

**HSEM F665      Strategic Collaboration**

**3 Credits**

Offered As Demand Warrants

This course is designed to explore the techniques of collaboration and communication and their strategic use in managing contemporary organizations. Students will identify their own communication style and how to deploy it in various managerial situations. Topics will include exploring individual personality type and the effect of type on collaboration style, identifying the purposes for types of communication, conflict and collaboration, the presentation of data and results. Emergency communication will also be explored. Students will work on improving practical skills such as listening, writing, and creating and delivering presentations. Special fees apply. *Prerequisites: Must be admitted to the MSDM or MBA program; or permission of MSDM or MBA program manager.* Cross-listed with MBA F665. (3+0)

**HSEM F690      Security and Disaster Management**

**3 Credits**

Offered Spring

This course serves as the capstone course for the security and disaster management degree. This course should be taken near the end of the students' graduate program. This course will focus on the integration of both security and disaster management in a complex globalized environment. The course will explore touch points for public and private partnerships, organizing for effective security and disaster management solutions and the development of effective policies for both the public and private sectors. Special fees apply. *Prerequisites: Must be admitted to the MSDM program; or permission of MSDM program director.* (3+0)

**HSEM F692      Security and Disaster Management Seminar**

**3 Credits**

Offered Summer

This course is designed to bring Homeland Security and emergency management topics into the classroom as necessary. Such topics might include international security, disaster logistics or disaster economics. Additional topics will arise out of current events. This course may be taken 2 times as topics change. Special fees apply. *Prerequisites: Must be admitted to the MSDM program; or permission of MSDM program director.* (3+0)

**HONORS**

**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 recommended. 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. *Prerequisites: ENGL F211X or ENGL F213X; COMM F141X or COMM F131X; enrollment in the Honors Program; or permission of instructor. 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 recommended. 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. This course may be repeated twice for credit. *Prerequisites: ENGL F211X or ENGL F213X; COMM F141X or COMM F131X; HONR F381; enrollment in the Honors Program; or permission of instructor. Recommended: Honors sections of ENGL F211X or ENGL F213X and of COMM F141X.* (1+0)

**HONR F383 Honors Capstone Seminar**  
 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 recommended for Honors students. 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. *Prerequisites: HONR F381; HONR F382; ENGL F211X or ENGL F213X; COMM F141X or COMM F131X; enrollment in the Honors Program; or permission of the instructor. 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)

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)

**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. Cross-listed with JUST F125. (3+0)

**HUMS F140 Family Dynamics**  
 3 Credits Offered Fall As Demand Warrants  
 Focus is on the family as a system and its involvement in the services provided to elders and children as well as services to family members with mental illness, developmental disabilities and substance abuse or dependence. (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 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)

**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

<p><b>HUMS F205</b>      <b>Basic Principles of Group Counseling</b>  <b>3 Credits</b>            Offered Spring</p> <p>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)</p>	<p><b>HUMS F262</b>      <b>Pharmacology of Addictions</b>  <b>1 Credit</b>                Offered As Demand Warrants</p> <p>Pharmacological overview of the significant drugs of abuse in today's society. <i>Prerequisites: HUMS F125.</i> (1+2)</p>
<p><b>HUMS F210</b>      <b>Crisis and Grief Counseling</b>  <b>3 Credits</b>            Offered Fall</p> <p>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)</p>	<p><b>HUMS F263</b>      <b>Fetal Alcohol Spectrum Disorder</b>  <b>1 Credit</b></p> <p>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)</p>
<p><b>HUMS F215</b>      <b>Individual Interviewing</b>  <b>2-3 Credits</b></p> <p>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)</p>	<p><b>HUMS F264</b>      <b>Culture, Chemical Dependency and Alaskan Natives</b> ❄️  <b>1 Credit</b>                Offered As Demand Warrants</p> <p>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. <i>Prerequisites: HUMS F125.</i> (1+0)</p>
<p><b>HUMS F232</b>      <b>Human Service Practicum I</b>  <b>3 Credits</b></p> <p>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. <i>Prerequisites: Human Services major or minor; permission of instructor.</i> (1+8)</p>	<p><b>HUMS F265</b>      <b>Substance Abuse and the Family</b>  <b>1-2 Credits</b>            Offered As Demand Warrants</p> <p>Basic understanding of family dynamics and roles related to addictions. <i>Prerequisites: HUMS F125 or permission of instructor.</i> (1-2+0)</p>
<p><b>HUMS F233</b>      <b>Human Service Practicum II</b>  <b>3-6 Credits</b></p> <p>Continuation of HUMS F232. Course may be repeated once for credit to meet program requirements. <i>Prerequisites: HUMS F232.</i> (1+8)</p>	<p><b>HUMS F266</b>      <b>Co-occurring Disorders</b>  <b>1-2 Credits</b>            Offered As Demand Warrants</p> <p>Theories and skills related to counseling the mentally ill substance abuser. Includes diagnosis, treatment planning and approaches, and special considerations. <i>Prerequisites: HUMS F125.</i> (1-2+0)</p>
<p><b>HUMS F240</b>      <b>Family Empowerment II</b>  <b>4 Credits</b>                Offered As Demand Warrants</p> <p>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. <i>Prerequisites: HUMS F140.</i> (4+0)</p>	<p><b>HUMS F270</b>      <b>Adolescent Issues and Therapeutic Interventions</b>  <b>3 Credits</b>                Offered As Demand Warrants</p> <p>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. <i>Prerequisites: HUMS F170 or permission of instructor.</i> (3+0)</p>
<p><b>HUMS F250</b>      <b>Current Issues in Human Services</b>  <b>1-4 Credits</b>            Offered As Demand Warrants</p> <p>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)</p>	<p><b>HUMS F272</b>      <b>Attachment, Separation, and Loss</b>  <b>1 Credit</b>                Offered As Demand Warrants</p> <p>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. <i>Prerequisites: HUMS F170.</i> (1+0)</p>
<p><b>HUMS F255</b>      <b>Workforce Development II</b>  <b>3 Credits</b>                Offered As Demand Warrants</p> <p>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. <i>Prerequisites: HUMS F150.</i> (3+1)</p>	<p><b>HUMS F280</b>      <b>Prevention and Community Development</b>  <b>3 Credits</b>                Offered Fall</p> <p>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. <i>Prerequisite: HUMS F101; HUMS F102; or departmental approval.</i> (3+0)</p>
<p><b>HUMS F260</b>      <b>History of Alcohol in Alaska</b> ❄️  <b>1 Credit</b></p> <p>Significant historical forces, events and consequences related to alcohol and other drug use in Alaska. Includes current impact and trends. <i>Prerequisites: HUMS F125 or permission of instructor.</i> (1+0)</p>	<p><b>HUMS F290</b>      <b>Case Management</b>  <b>3 Credits</b>                Offered Fall</p> <p>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. <i>Prerequisite: HUMS F101; HUMS F102; or departmental approval.</i> (3+0)</p>
<p><b>HUMS F261</b>      <b>Substance Abuse Assessment: ASAM PPC II</b>  <b>1 Credit</b>                Offered As Demand Warrants</p> <p>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. <i>Prerequisites: HUMS F125 or permission of instructor.</i> (1+0)</p>	

## HUMAN SERVICES (HUMS) — JAPANESE (JPN)

**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)

## 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)

**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)

**HUM F492P**      **Senior Seminar**  
**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. Graded Pass/Fail. **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**      **Japanese Culture and Conversation IA (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**      **Japanese Culture and Conversation IB (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 F100E**      **Japanese Culture and Conversation IIA (h)**  
**3 Credits**      Offered As Demand Warrants  
This is the first semester of second-year exploration of Japanese culture and conversation and requires completion of JPN F100B with a grade of C- or higher. This course does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements. **Prerequisites:** *JPN F100B or instructor permission*. (3+0)

**JPN F100F**      **Japanese Culture and Conversation IIB (h)**  
**3 Credits**      Offered As Demand Warrants  
This is the first semester of second-year exploration of Japanese culture and conversation and requires completion of JPN F100E with a grade of C- or higher. This course does not meet Perspectives on the Human Condition requirements, or Foreign Language major or minor requirements. **Prerequisites:** *JPN F100E 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. 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/FL F200X; ENGL F211X or F213X or permission of instructor; 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)

## JOURNALISM

**JRN F101 Media and Culture (h)**  
**3 Credits** Offered Fall and Spring  
 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. (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. (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 Darkroom Photography (h)**  
**3 Credits**  
 Photography fundamentals, including use of an adjustable camera, film and exposure techniques, filters and 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. Cross-listed with ART F283. (2+3)

## JOURNALISM (JRN)

### JRN F204 Basic Digital 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. Cross-listed with ART F284. (3+0)

### JRN F215 Radio Production 3 Credits

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

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

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 photography manipulation. *Prerequisites:* JRN F250. *Recommended:* Advanced knowledge of Macintosh operating system. (3+0)

### JRN F240 Foreign Corresponding (h) 3 Credits

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

Create website 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 Introduction to Video Production 4 Credits

An introduction to video production with an emphasis on television studio production. Special fees apply. Cross-listed with FLM F251. (2+5)

### JRN F280 Video Storytelling (h) 3 Credits

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

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 F302 W Reporting 3 Credits

News reporting basics: covering beats, including police, sports, local government, science and the military. Cultivating sources, interviewing and reporting through public records. Working with numbers, segments on print, video and online reporting methods and style conventions. Special fees apply. *Prerequisites:* JRN F101; JRN F202; JRN F251; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor. (3+0)

### JRN F305 Snedden Chair Lectures 3 Credits

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. *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. Cross-listed with FLM F308. (3+0)

### JRN F311 W Magazine Article Writing (h) 3 Credits

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. 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

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

Typography, layout and design, coupled with a study of the methods of printing production. Special fees apply. *Prerequisites:* Permission of instructor. (2+2)

### JRN F368 Topics in American Film History (s) 3 Credits

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 and FLM F368. (3+0)

### JRN F371 O Digital Imaging (h) 3 Credits

This course focuses on creating and manipulating digital images, including digital painting and photography. The varied ethical issues engendered by this expertise will be addressed in depth. Skills and knowledge useful for digital photography, digital video compositing and digital painting will be covered. Special fees apply. *Prerequisites:* ART F161 or ART F271 or ART F284/JRN F204 or FLM/JRN F290; COMM F131X or COMM F141X. Cross-listed with ART F371; FLM F371. (1+4)

### JRN F380 O Women, Minorities and the Media (h) 3 Credits

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. *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)

**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 Spring  
 Continuation of JRN F203/ART F283. 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 ART F283 or instructor permission.* Cross-listed with ART F483. (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 ART F283 or permission of instructor.* (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.* Cross-listed with ART F465. Stacked with ART F665; 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 or ART F465.* (2+2)

**JRN F407 Digital Darkroom**  
**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 ART F283 or permission of instructor.* Cross-listed with ART F487. (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 F412 Portrait Photography**  
**3 Credits** Offered Fall  
 This course will teach the student who has basic or advanced exposure and printing skills to further their understanding of the principles and techniques of portrait photography. Students will work with SLR or DSLR cameras and editing through a digital photo suite such as Adobe Photoshop. Students will learn to perfect their exposures and portrait skills, work with models, and handle studio strobes and equipment using traditional and digital media. Assignments will focus on both technical and aesthetic concerns. In-class critiques will provide feedback on students' work and weekly slide shows will provide insight on historical and contemporary portrait photographers. Special fees apply. *Prerequisites: ART F483 or JRN F402; ART F487 or JRN F407 or permission of instructor.* Cross-listed with ART F412. (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. *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 F432 W Public Relations Techniques**  
**3 Credits** Offered Fall Even-numbered Years  
 This course examines the role of public relations in publicity, media relations, market research, crisis management, ethics, communication theories and related topics. Central to the class is the learning of persuasive writing techniques and the writing and rewriting of public relations documents including press releases, public service announcements, media alerts, features, newsletters and backgrounders. Class includes examination of case studies and preparation of a comprehensive final paper/project: a public communications "message plan" plan for a business, organization or institution. *Prerequisites: ENGL F211X or ENGL F213X; JRN F202; or permission of instructor.* (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 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.

## JOURNALISM (JRN)

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 O Newscast 3 Credits Offered Fall

In-depth experience with television news production including electronic newsgathering. Emphasis on producing a broadcast-quality weekly newscast and packages for distribution in various media. Special fees apply. *Prerequisites: JRN F101; JRN F202; JRN F251; JRN F302; COMM F131X or F141X.* (1+0+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 F458 SFX Up Your Video (h) 3 Credits Offered Spring Odd-numbered Years

An exploration into adding special effects to your video projects. Will include "green screen," titles, animation, color grading, DVD menu design and more. *Prerequisites: FLM/JRN F290; FLM/THR F271 or FLM/JRN F280; video editing experience or permission of instructor.* Cross-listed with FLM F458. (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 1920s 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)

### 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 3D Animation (h) 3 Credits Offered Spring

Concept and technique of 3D computer generated animation with applications in fine and commercial art. 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/FLM/THR F172; ART/FLM F371 or equivalent; COMM F131X or COMM F141X.* 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 in writing, art or television production.* Cross-listed with ART F484. Stacked with ART F684 and 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. Cross-listed with ART F465 and ART F665. (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 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 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 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 in writing, art, or television production.* Cross-listed with ART F684. Stacked with ART F484 and JRN F484. (3+3)

**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. (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 Fall  
 An introduction to adult institutions, community-based programs, and theories of incarceration. Correctional programs are examined. *Prerequisites: JUST F110; junior standing.* (3+0)

**JUST F315 Correctional Counseling and Rehabilitation**  
**3 Credits** Offered Spring  
 A study of various treatment and rehabilitative/restorative methods utilized in correctional settings. Topics include the roles of correctional personnel, the assessment and treatment of juveniles and adults, casework in correctional settings, crisis intervention, and the assessment and treatment of special populations in the correctional setting. *Prerequisites: Junior standing; JUST F310; ENGL F211X or ENGL F213X or permission of the instructor.* (3+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 F453 O Comparative Criminology (s)**  
**3 Credits** Offered Fall.  
 The Justice program focuses on the American justice system with an emphasis in restorative processes, alternative dispute resolution, and

## JUSTICE (JUST) — LATIN (LAT)

Alaskan justice. This course examines the development of philosophy and law; and the historical and modern practice of justice throughout the world. *Prerequisites: COMM F131X or COMM F141X; JUST F110; JUST F251 or permission of instructor.* (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)

### 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 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 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. (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. *Prerequisites: LAT F101.* (3+0)

**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. *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. *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-borne 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

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 students enrolling in one or more School of Management courses (ACCT, AIS, BA, ECON, HSEM, LEAD, or MBA) excluding ECON F100X. This fee is in addition to any materials fees.

**LEAD 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. This course is cross-listed with BA F280. (3+0)

**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. Special fees apply. *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 W** 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. Special fees apply. *Prerequisites: HSEM F301; ENGL F111x or ENGL F112X or ENGL F113x; or permission of instructor.* Cross-listed with HSEM F456. (3+0)

**LEAD F470** Leadership Theory and Development  
3 Credits

Offered Alternate Spring  
A guide for interpreting leadership theory and research as well as practical advice on how to be a better leader. The course acts as a review of all functional leadership theories, how the theories relate to one another, and how students can apply the leadership theories to their own personal development. Special fees apply. *Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; COMM F131X or COMM F141X and BA F390 or permission of the instructor.* (3+0)

**LEAD F472** Leading Change  
3 Credits

Offered Alternate Fall  
The course is designed to explore some of the technologies for intervening in organizations to develop their capability and to achieve change. We explore the way in which change agents deal with their conflicting demands. The thrust of the text is how to become a leading change agent within an organization and extend your understanding and application of key concepts and theories. Special fees apply. *Prerequisites: ENGL F211X or ENGL F213X; COMM F131X or COMM F141X; BA F390 or permission of instructor.* (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)

## LIBERAL ARTS AND SCIENCE (LAS) — LINGUISTICS (LING)

### 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. (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. Some sections may emphasize selected academic areas. (1+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. (3+0)

### LING F200 The Field of Teaching English to Speakers of Other Languages

1 Credit

The course provides an introduction to the profession of English second language teaching with a focus on the types knowledge, training and experience valued in the field as well as available international and US employment options. The course is offered on a pass/fall basis. *Prerequisites: ENGL F111X.* (1+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 F223 Sociolinguistics: Language and Social Inequality

3 Credits

Offered Spring

This course is an introduction to the concepts and methods of linguistic anthropology and sociolinguistics. It draws from these disciplines in order to investigate the role of language variation in social inequality. It covers concepts including language varieties, speech styles, language ideologies,

the creation of standard languages and portrayals of ethnolinguistic groups in the media. *Prerequisites: ANTH F100X or LING F101.* Cross-listed with ANTH F223. (3+0)

### LING F302 Second Language Acquisition

3 Credits

Offered Spring

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 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 F315 English Language for Second Language Teaching

3 Credits

Study of the history, spread and varieties of the English language and the basic elements of its grammar, sound system and its use in discourse. This course is designed for students interested in teaching English as a second language and focuses on teaching implications of course content. *Prerequisites: ENGL F211 or F213; LING F101.* (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

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 F410 O Theory and Methods of Second Language Teaching

3 Credits

Offered Fall

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; three years of a foreign or Alaska Native language or LING F302 and LING F315; or permission of instructor.* (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 Fall 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 Spring Even-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 F435**      **Political Media and Discourses of the American Right (s)**  
**3 Credits**      Offered Fall Even-numbered Years or As Demand Warrants  
This class uses “hands-on” discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right; the nature of the relationship between a message, its form and persuasion; and how moral stance are taken in political contexts. Evaluation of the veracity, ethical or historical merits of conservative political stances is not part of the scope of this course. *Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X.* (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 F441**      **Topics in Linguistics**  
**3 Credits**  
An elective course in linguistics for majors. Content will vary from year to year and may be drawn from many areas of linguistics to include current research and methodologies. Course may be repeated two times for credit when content varies. *Prerequisites: LING F101, LING F318 and LING F320 or permission of instructor.* (3+0)
- LING F450 O**      **Language Policy and Planning (s)**  
**3 Credits**      Offered Fall Odd-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 F451**      **English Second Language Teaching Practicum**  
**3 Credits**      Offered Spring  
Methodology workshop for students interested in teaching English as a second language. Includes language acquisition pedagogy and employment of these techniques in a lower division language classroom under the supervision of a classroom teacher. Enrollment subject to available classroom placement. *Prerequisites: ENGL F211X or ENGL F213X; LING F410; or permission of instructor.* (2+0+3)
- LING F482**      **Seminar in Linguistics**  
**3 Credits**      Offered Spring  
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. *Prerequisites: LING F101; LING F318; LING F320; or permission of instructor.* (3+0)
- 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**      Offered Spring  
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. *Prerequisites: LING F101 or LING F601; graduate standing; or permission of instructor.* (3+0)
- LING F604**      **Morphology and Syntax**  
**3 Credits**      Offered Fall  
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. *Prerequisites: LING F602.* (3+0)
- LING F611**      **Second Language Curriculum and Materials Development**  
**3 Credits**      Offered Spring 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

## LINGUISTICS (LING) — MARINE SCIENCE AND LIMNOLOGY (MSL)

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**            Offered As Demand Warrants

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 ED F621. (3+0)

**LING F627**            **Introduction to Linguistic Description and Documentation** ✨

**3 Credits**            Offered Spring Odd-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 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 F430. (3+0)

**LING F631**            **Field Methods in Descriptive Linguistics I** ✨  
**3 Credits**            Offered Fall 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 Spring Even-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 F635**            **Political Media and Discourses of the American Right**

**3 Credits**  
The class uses “hands-on” discourse analytic techniques of student-collected media data in order to examine whether or not there is a unified rhetorical style associated with the American Right; the nature of the relationship

between a message, its form and persuasion; and how moral stance are taken in political contexts. Evaluation of the veracity, ethical or historical merits of conservative political stances are not part of the scope of the class. *Prerequisites:* Graduate standing. Cross-listed with ANTH F635. Stacked with ANTH F435; (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 Odd-numbered Years

Graduate level introduction to important topics in Athabascan linguistics, including both foundational literature and current research. Topics may 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**            Offered As Demand Warrants

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 As Demand Warrants

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 F151X, 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 1 Credit	Marine Science Laboratory Offered spring	MSL F403 3 Credits	Estuaries Oceanography Offered Fall
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. Special fees apply. <i>Prerequisites: MSL F212 or concurrent enrollment</i> (0+3)		Advanced class for Marine Science minors, offering an overview of the oceanography of estuaries. The class involves lectures, reading assignments, reviewing and criticizing scientific literature. <i>Prerequisites: MSL F212, STAT F200X or permission of instructor.</i> (3+0)	
MSL F215 3 Credits	Marine Geological Drama and Undersea Catastrophes	MSL F411 3 Credits	Current Topics in Oceanographic Research
Case studies of geological events that disrupt the ocean environment serve as an introduction to geological oceanography and its connections to other aspects of ocean and Earth history. <i>Prerequisites: MSL F111X; or MSL F211; or permission of instructor.</i> (3+0)		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. <i>Prerequisites: Four semesters of natural sciences at F100-level or above or permission of instructor.</i> (3+0)	
MSL F216 3 Credits	The Oceans and Global Change Offered Fall	MSL F412 3 Credits	Early Life Histories of Marine Invertebrates Offered Fall Odd-numbered Years
Explores how global environmental changes are affecting Earth's oceans. Topics include climate change and ocean warming, sea level rise, coastal erosion, declining sea ice, changes in ocean circulation and ecosystems, oceanic uptake of carbon dioxide, ocean acidification, ocean pollution, dead zones and climate engineering. The course will investigate the causes, effects and implications of changes in the oceans. <i>Prerequisites: MSL F111X or MSL F211 or ATM F101X or ENVI F101 or GEOG F111X.</i> (3+0)		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. <i>Prerequisites: MSL F212 and upper-division standing or permission of instructor.</i> (3+0)	
MSL F220 2 Credits	Scientific Diving Offered Spring	MSL F419 3 Credits	Concepts in Physical Oceanography Offered Fall Even-numbered Years
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. <i>Prerequisites: Basic biology/ecology courses, SCUBA (open water) certification. Special Conditions: Must have current SCUBA physical approved.</i> (1+1+8)		This course establishes the physical concepts that account for fluid motion of the oceans on our rotating earth. This course will include the role of the Coriolis force, ocean stratification, wind driven and thermohaline circulation, tides and the major ocean gyres and why they are present. The physical forces that influence biological production will be presented. These foundation concepts will be part of a well-rounded undergraduate program in marine science or establish the foundation for graduate students. <i>Prerequisites: MATH F251X (or higher) or PHYS F211X (or higher); or instructor permission.</i> (3+0)	
MSL F317 3 Credits	Introduction to Marine Mammal Biology Offered Spring Even-numbered years	MSL F421 2 Credits	Field Course in Subtidal Studies Offered Spring
The course will introduce students to the biology and diversity of cetaceans, pinnipeds, sirenians, and other marine mammals. Topics will include evolution, ecology, reproduction, and behavior of marine mammals, their special adaptations, such as diving, osmo- and thermoregulation, and will explore some current conservation and management issues. The course will be structured in a lecture format. <i>Prerequisites: BIOL F116 or MSL F212 or instructor permission.</i> (3+0)		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. <i>Prerequisites: MSL F420, basic biology/ecology courses, SCUBA (open water) certification. Special Conditions: Must have a current SCUBA physical approved.</i> Stacked with MSL F623 Stacked with MSL F623. (1+1+8)	
MSL F330 3 Credits	The Dynamic Alaskan Coastline Offered Fall	MSL F431 3 Credits	Polar Marine Science ❄️ Offered Fall Even-numbered Years
Mountains, rivers, glaciers, fjords, estuaries, deltas, tidal zones, sediments, nutrients, elements, habitats, fish. This class will provide an interdisciplinary perspective on the dynamic Alaskan coastal landscape from Glacier Bay to the Arctic. We will delve into the driving geological, geochemical, and oceanographic processes occurring along Alaska's coast and linkages to various marine ecosystems. Students will learn the fundamental physical and geochemical processes in the coastal zone using various locations in Alaska as examples. Field trip required. Special fees apply. <i>Prerequisites: Junior standing; MSL F111X or GEOS F101; CHEM F105X; PHYS F103X or PHYS F211X.</i> (3+0)		Physical, biological, chemical and geological oceanography of the polar oceans with emphasis on comparing and contrasting the Arctic and Antarctic. <i>Prerequisites: MSL F111; or graduate standing.</i> Stacked with MSL F621. (3+0)	
MSL F435 3 Credits	Acoustical Oceanography	MSL F440 3 Credits	Oceanography for Fisheries Offered Fall Even-numbered Years
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. <i>Prerequisites: College physics and calculus.</i> (3+0)		Students examine how understanding the oceanographic processes that determine the distribution, recruitment, and abundance of marine	

## MARINE SCIENCE AND LIMNOLOGY (MSL)

vertebrates and invertebrates from global to local scales and from evolutionary time scales to daily scales supports the sustainable management of marine fisheries resources. **Prerequisites:** CHEM F105X, PHYS F103X, FISH F288, STAT F200X. **Recommended:** FISH F425. Cross-listed with FISH F440. (3+0)

### MSL F449 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; MSL F212 for undergraduate students. (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, collecting and analyzing ecological data, report writing and feedback. Special fees apply. **Prerequisites:** UAF Science Diver certification. Stacked with MSL F656. (28+35)

### MSL F461 Chemical Oceanography 3 Credits Offered Spring

An integrated study of the chemical, biological, geological and physical processes that determine the distribution of chemical variables in the sea. Topics include biogeochemical cycles and the use of tracers to follow these complex chemical cycles. The chemistry of carbon is considered in detail. Interactions with the atmosphere and lithosphere (including implications of the mid-ocean ridge vent system to ocean chemistry) are examined. **Prerequisites:** Upper-division standing, CHEM F106X, BIOL F116X. Stacked with CHEM F660; MSL F660. (3+0)

### MSL F463 Chemical Coastal Processes 3 Credits Offered Spring Even-numbered Years; As Demand Warrants

A study of chemical processes in the coastal ocean. This course will examine chemical interactions at different boundaries, and explore physical and biological controls on the chemistry of coastal environments. Some of the topics to be covered include: The role of suspended particles; coastal acidification, photochemical processes; controls on coastal productivity; future challenges in coastal management. This course is intended for students

with a background in general chemistry and marine science. **Prerequisites:** Upper-division standing, CHEM F105X, CHEM F106X and MSL F111X or MSL F211, F212, F213L series; or permission of instructor. Stacked with MSL F663. (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 F200X; 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 F613 Veterinary Nutrition and Metabolism****2 Credits**

This course will examine the nutritional needs of major species of veterinary importance. Discussion will revolve around specific nutritional needs as they relate to life-stages and production status of monogastric and ruminant animals. Course topics deal with the classification and function of nutrients, digestive processes (monogastric, ruminant, hind-gut fermenters), evaluation of feedstuffs and feed labels, and principles of disease related to nutritional deficiency as well as nutritional excess. **Prerequisites:** *Successful completion of first semester veterinary courses.* Cross-listed with DVM F623. (2+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 F618 Functional Anatomy****8 Credits**

Offered Fall

The course will include an introduction to veterinary anatomy in which the basics veterinary anatomy, orientation, nomenclature, locomotion apparatus, circulatory system, digestive, respiratory apparatus, lymphatic organs and nervous system of domestic animals will be explained. A general explanation of the basic anatomical preparation techniques will be presented to improve the manual skills of the students. The course will place the anatomical knowledge in a clinical context. **Prerequisites:** *Admittance to the professional veterinary program.* (5+6)

**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 F253X; 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.* Stacked with MSL F431 (3+0)

**MSL F622 Tides — Their Nature and Impact****3 Credits**

Offered Spring Even-numbered Years

This course will provide students in marine sciences with in-depth knowledge of tides and the role of tides in the physical, biological, chemical and geological processes in the oceans. We will investigate the importance of tides for the coastal regions of the Bering Sea and North Pacific. We will also cover associated aspects such as tidal currents and their role in transport of sediments, zooplankton and fish larvae, harnessing the tidal power for the generation of electricity, and impact of tides on climate. **Prerequisites:** *MSL F620; MATH F252X; baccalaureate degree in physics, engineering, mathematics or equivalent.* (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 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 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. Paleooceanography. **Prerequisites:** *Graduate standing or permission of instructor. Upper-division standing are invited to contact the instructor.* (3+0)

## MARINE SCIENCE AND LIMNOLOGY (MSL)

**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 F200X; STAT F401 or equivalent; FISH F627 (Statistical Computing with R) or familiarity with R, general ecology, graduate standing in fisheries or permission of instructor. Cross-listed with FISH F631. (3+0)

**MSL F632 Oceanographic Data Analysis and Visualization**  
**3 Credits** Offered Alternate Springs  
 This course introduces students to data analysis and visualization techniques commonly applied to oceanographic datasets. Students will gain a theoretical and practical understanding of propagation of errors, linear least squares regression, and time series analyses such as correlation, coherence and spectral estimation. The course will also cover Empirical Orthogonal Function (EOF) analysis. A significant portion of the class will be a project that will give students an opportunity to learn a data analysis technique suited to their research. Matlab will be used throughout. *Prerequisites:* Graduate standing; MATH F253X; MATH F314; or permission of the instructor. (3+0)

**MSL F633 Integrative Oceanography**  
**3 Credits** Offered Fall Odd-numbered Years  
 This course explores the interactions between physical, chemical and biological processes in the ocean. A wide range of spatial scales will be considered, ranging from the large ocean gyres down to the physicochemical scales on which individual bacteria, phytoplankton and zooplankton function. The course covers case studies that provide examples of the processes, connections and feedbacks that control the biological, chemical and physical variability throughout the oceans. Students will improve their interdisciplinary understanding of oceanography and learn how to apply these concepts in their own research. *Prerequisites:* Graduate standing; MSL F620 or MSL F630 or MSL F650 or MSL F660. (3+0)

**MSL F637 Veterinary Bacteriology and Mycology**  
**3 Credits**  
 This course will discuss bacterial structure, differences between bacterial families, and fungi and their pathogenesis. The basic principles of bacterial and fungal pathogenesis will be presented. Host response to bacterial or fungal infection, immunity and the role of vaccines in disease prevention will be explained. *Prerequisites:* Successful completion of first semester veterinary courses. Cross-listed with BIOL F632; DVM F637. (3+0)

**MSL F638 Veterinary Parasitology**  
**2 Credits** Offered Spring  
 Biology of helminth, arthropod and protozoan pathogens of animals with emphasis on common infectious diseases encountered in veterinary practice will be discussed. In addition, the course will discuss treatment and management options for parasitic infections of domestic animals. *Prerequisites:* Permission of instructor. Cross-listed with DVM F638; BIOL F634. (2+0)

**MSL F639 Veterinary Virology**  
**2 Credits** Offered Spring  
 This course will explore current concepts in the field of veterinary virology, with an emphasis on the viral structure, viral genetic material and viral replication strategies of various animal viruses. In addition, mechanisms of viral pathogenesis, prevention and treatment of viral infection will be presented. *Prerequisites:* Successful completion of first semester veterinary courses. (2+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 F642 Veterinary Pathology/Biology of Disease I**  
**5 Credits** Offered Spring  
 This course will discuss basic principles of disease with special emphasis on processes likely to be encountered in veterinary practice. We will discuss these topics organized by underlying disease mechanism. The discussions will move from general cell mediated processes to more specific disease mechanisms. *Prerequisites:* Successful completion of first semester veterinary courses. Cross-listed with BIOL F640; DVM F640. (4+3)

**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 Fall 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 Fall Even-numbered Years  
 Ecology of marine benthos, from subtidal to hadal zone with emphasis on soft-sediment systems, seamounts and chemosynthetic environments. Methods of studying benthic ecosystems. Life strategies of benthic organisms, including animal-sediment relationships, feeding, reproduction and growth. Large scale spatial and temporal patterns in distribution and biodiversity of benthic organisms. Organic matter deposition and cycling in marine sediments. (3+0)

**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  
 An integrated study of the chemical, biological, geological and physical processes that determine the distribution of chemical variables in the sea. Topics include biogeochemical cycles and the use of tracers to follow these complex chemical cycles. The chemistry of carbon is considered in detail. Interactions with the atmosphere and lithosphere (including implications of the mid-ocean ridge vent system to ocean chemistry) are examined. *Prerequisites: Graduate standing.* Cross-listed with CHEM F660. Stacked with MSL F461. (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 F663**      **Chemical Coastal Processes**  
**3 Credits**      Offered Spring Even-numbered Years; As Demand Warrants  
 A study of chemical processes in the coastal ocean. This course will examine chemical interactions at different boundaries, and explore physical and biological controls on the chemistry of coastal environments. Some of the topics to be covered include: The role of suspended particles; coastal acidification, photochemical processes; controls on coastal productivity; future challenges in coastal management. This course is intended for students with a background in general chemistry and marine science. *Prerequisites: Graduate standing.* Stacked with MSL F463. (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 F676**      **Aquatic Food Web Ecology**  
**3 Credits**      Offered Fall Even-numbered Years  
 This course will examine theoretical and applied aspects of aquatic food web ecology, from the ecological processes that give rise to patterns in aquatic communities to the incorporation of trophic interactions into ecosystem-based management. Lectures and discussion will focus on ecological theory and case studies. Lab exercises will introduce empirical and modeling approaches for studying food web interactions. Proficiency with Excel and basic statistics is preferred. *Prerequisites: FISH F425 or permission of instructor.* Cross-listed with FISH F676. (2+3)

**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 and ANTH F680. (0+0+5-16)

## MASTER OF BUSINESS ADMINISTRATION

Students enrolling in School of Management courses are expected to have the necessary prerequisites for each course.

A per-semester student computing facility user fee will be assessed for students enrolling in one or more School of Management courses (ACCT, AIS, BA, ECON, HSEM, LEAD and MBA) excluding ECON F100X. This fee is in addition to any material fees.

**MBA 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. Special fees apply. *Prerequisites: MBA F602; graduate standing; or permission of the MBA director.* (3+0)

**MBA F607**      **Human Resources Management**  
**3 Credits**      Offered Spring  
 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. Special fees apply. *Prerequisites: Admission to the MBA program; or permission of the MBA director.* (3+0)

**MBA F617**      **Organizational Theory for Managers**  
**3 Credits**      Offered Spring  
 Overview of the history, concepts, literature and applications in organizational theory. Emphasis on applications and cases applying organizational theory concepts to management. Special fees apply. *Prerequisites: Admission to the MBA program; or permission of the MBA director.* (3+0)

**MBA 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. Special fees apply. *Prerequisites: Admission to the MBA program; MBA F680; or permission of the MBA Director.* (3+0)

**MBA F624**      **Controllorship**  
**3 Credits**      Offered As Demand Warrants  
 An advanced course designed to meet the accounting needs of managers. Topics of study include evaluating the design and implementation of management control systems and making recommendations for efficiency and effectiveness, recognizing the ethical, environmental, legal/regulatory,

## MASTER OF BUSINESS ADMINISTRATION (MBA)

political and social issues embedded within the design, evaluation and effective implementation of management control systems. **Prerequisites:** *MBA F602 or equivalent; Must be admitted to MBA program; or permission of MBA Director.* (3+0)

### **MBA F627 Business Law and Ethics** 3 Credits

This course will focus on the legal, ethical and practical aspects of business law. The primary goal of the course is to better prepare graduate students for their roles as leaders in the business world. In this course MBA students will learn from a practical standpoint how to take the necessary legal steps to guide a business through the legal maze that awaits them. The course will additionally target the decision-making process from an ethical standpoint. Students will have a thorough understanding of the various areas of business law, allowing them to make legal and ethical decisions in the future. Special fees apply. **Prerequisites:** *Admission to the MBA program.* (3+0)

### **MBA F630 Derivative Securities** 3 Credits

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. Special fees apply. **Prerequisites:** *Admission to the MBA program, MBA F620; or permission of the MBA director.* (3+0)

### **MBA F632 Project Management** 3 Credits

This course is designed to cover key components of project management fundamentals with emphasis on the project life cycle, project definition, project schedule and cost management, human resource allocation and the challenges facing project managers in every industry. We will focus on concepts, theories and best practices, while discussing managing and leading project teams in complex environments. Special fees apply. **Prerequisites:** *Must be admitted to the MSDM or MBA program; or permission of MSDM or MBA program director.* Cross-listed with HSEM F632. (3+0)

### **MBA F642 Economics of Environmental and Business Sustainability** 3 Credits

This course is designed to examine the emerging role of the business and corporate sector in responding to the economic challenges of achieving social and ecological sustainability. The microeconomic theory used to model business behavior motivated by profit maximization is expanded to an accounting framework, referred to as the triple bottom line (TBL). The TBL consists of profits, people and planet. The TBL motivates companies to measure financial, social and environmental outcomes associated with their business operations. The course investigates alternative measurements for evaluating the performance of the economy and the business and consumer sectors. Special fees apply. **Prerequisites:** *Must be admitted to the MBA program.* (3+0)

### **MBA F643 Marketing Management** 3 Credits

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. Special fees apply. **Prerequisites:** *Admission to the MBA program; or permission of the MBA director.* (3+0)

### **MBA F665 Strategic Collaboration** 3 Credits

This course is designed to explore the techniques of collaboration and communication and their strategic use in managing contemporary organizations. Students will identify their own communication style and how to deploy it in various managerial situations. Topics will include exploring individual personality type and the effect of type on collaboration style, identifying the purposes for types of communication, conflict and

collaboration, the presentation of data and results. Emergency communication will also be explored. Students will work on improving practical skills such as listening, writing, and creating and delivering presentations. Special fees apply. **Prerequisites:** *Must be admitted to the MSDM or MBA program; or permission of MSDM or MBA program manager.* Cross-listed with HSEM F665. (3+0)

### **MBA F673 Innovation Management** 3 Credits

Offered As Demand Warrants  
Overview of the skills a manager needs to administer an innovation systems and toolkit for dealing with various innovation issues in a broad business setting. Topics include creation innovation diversity; innovation dynamics, intellectual properties, technology/innovation commercialization, and innovation strategies. Special fees apply. **Prerequisites:** *Graduate standing or approval of the MBA director.* (3+0)

### **MBA F674 New Venture Development** 3 Credits

Offered Spring  
This course will provide students with a venue for commercializing their own or selected innovative ideas through focused study in several key areas of entrepreneurship. The hands-on approach and experience will teach specific methods to assess and understand the industry, customers and competitors for a new venture. Students will then learn to translate those insights into a winning venture idea, a business model and a set of distinctive new products and services. With this venture strategy in hand, students will then learn how to best raise venture financing, how to write a power business plan and create a compelling pitch for investors. Topics in this course include the meaning of entrepreneurship, concept to new venture, opportunity and feasibility study, intellectual property protection, strategic management, marketing strategies, new venture financing and human capital management. Special fees apply. **Prerequisites:** *Must be admitted to the MBA program.* (3+0)

### **MBA F675 Quantitative Methods for Managers** 3 Credits

Offered Fall  
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. Special fees apply. **Prerequisites:** *STAT F200X or equivalent and admission to the MBA program; or permission of MBA director.* (3+0)

### **MBA F680 Financial Markets and Strategy** 3 Credits

Offered Fall  
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. Special fees apply. **Prerequisites:** *Admission to the MBA program; MBA F675; or permission of MBA director.* (3+0)

### **MBA F681 Fixed Income Securities and Markets** 3 Credits

Offered Fall  
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. Special fees apply. **Prerequisites:** *Admission to the MBA program; MBA F630; or permission of MBA director.* (3+0)

### **MBA F682 Financial Statement Analysis** 3 Credits

Offered Fall  
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. Special fees apply.

*Prerequisites: Admission to the MBA program; or permission of MBA director. (3+0)*

**MBA F683**            **Advanced Topics in Marketing**  
**3 Credits**            Offered As Demand Warrants  
 Current topics and issues in marketing management, such as political and services marketing, marketing communications, marketing in Alaska or other relevant subjects. Note: May be taken twice for credit when topic changes. Special fees apply. *Prerequisites: Admission to the MBA program; MBA F643; or permission of MBA director. (3+0)*

**MBA F690**            **Corporate Strategy**  
**3 Credits**            Offered 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. MBA F690 is an advanced seminar taken during the student's last spring semester. Special fees apply. *Prerequisites: Admission to the MBA program; MBA F617; MBA F675; MBA F680; or permission of MBA director. (3+0)*

**MBA F691**            **Advanced Topics in Business**  
**3 Credits**            Offered As Demand Warrants  
 Developing managers' ability to excel in specialized areas of business such as entrepreneurship and risk management. Note: May be taken twice for credit when topic changes. Special fees apply. *Prerequisites: Admission to the MBA program; or permission of MBA director. (3+0)*

## MATHEMATICS

**MATH F113X**        **Concepts and Contemporary Applications of Mathematics (m)**  
**3 Credits**  
 Applications of mathematics in modern society. Topics include voting systems, management science, probability and statistics. Problem solving emphasized. *Prerequisites: DEVM F105; or DEVM F105N; or DEVM F105G, DEVM F105H, and DEVM F105J; or placement. (3+0)*

**MATH F122R**        **Prep for Precalculus for Business**  
**1 Credit**  
 An intensive, individualized review of prerequisite topics needed in precalculus for business along with small group practice of related functions topics. Emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in precalculus for business. Note: Credit may be earned for taking MATH F122R or MATH F122S, but not for both. Graded Pass/Fail. *Prerequisites: Previous W or grade below C- in MATH F122X; or placement into MATH F122R; or departmental recommendation. (0.7+1)*

**MATH F122S**        **Precalculus for Business Skills Workshop**  
**1 Credit**  
 Directed study of topics in MATH F122X, emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in precalculus for business and mathematics-based courses. Note: Credit may be earned for taking MATH F122R or MATH F122S, but not for both. Graded Pass/Fail. *Prerequisites: Previous W or grade below C- in MATH F122X; or placement into MATH F122S; or departmental recommendation. This course requires concurrent enrollment in MATH F122X. (0.5+1.5)*

**MATH F122X**        **Precalculus for Business and Economics (m)**  
**3 Credits**  
 A study of various classes of functions, exploring their numeric, algebraic and graphical aspects. Function classes include linear, quadratic, rational, exponential and logarithmic. This course is appropriate for students in programs relating to business and economics or students intending to take MATH F222X. Note: Credit may be earned for MATH F151X or MATH

F122X, but not for both. *Prerequisites: DEVM F105; or DEVM F105N; or DEVM F105G, DEVM F105H and DEVM F105J; or placement. (3+0)*

**MATH F151R**        **Prep for College Algebra for Calculus**  
**1 Credit**  
 An intensive, individualized review of prerequisite topics needed in Functions for Calculus along with small group practice of related functions topics. Emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in College Algebra for Calculus. Note: Credit may be earned for taking MATH F1515R or MATH F151S, but not for both. Graded Pass/Fail. *Prerequisites: Previous W or grade below C- in MATH F151X; or placement into MATH F151R; or departmental recommendation. (0.7+1)*

**MATH F151S**        **College Algebra for Calculus Skills Workshop**  
**1 Credit**  
 Directed study of topics in MATH F151, emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in Functions for Calculus and mathematics-based courses. Note: Credit may be earned for taking MATH F151R or MATH F151S, but not for both. Graded Pass/Fail. *Prerequisites: Previous W or grade below C- in MATH F151; or placement into MATH F151S; or departmental recommendation. This course requires concurrent enrollment in MATH F151. (0.5+1.5)*

**MATH F151X**        **College Algebra for Calculus (m)**  
**4 Credits**  
 Study of algebraic, logarithmic and exponential functions; system or equations; applications. Note: Credit may be earned for MATH F151X or MATH F122X, but not for both. *Prerequisites: B or better in DEVM F105; or B or better in DEVM F105G, DEVM F105H and DEVM F105J; or C or better in DEVM F105N; or placement. (4.5+0)*

**MATH F152X**        **Trigonometry (m)**  
**3 Credits**  
 A study of trigonometric functions including graphing, identities, inverse trigonometric functions, solving equations and polar coordinates; applications. *Prerequisites: MATH F151X; or concurrent enrollment in MATH F151X; or placement. (3+0)*

**MATH F156R**        **Prep for Precalculus**  
**1 Credit**  
 An intensive, individualized review of prerequisite topics needed in precalculus along with small group practice of related functions topics. Emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in precalculus. Note: Credit may be earned for taking MATH F156R or MATH F156S, but not for both. Graded Pass/Fail. *Prerequisites: Previous W or grade below C- in MATH F156X; or placement into MATH F156R; or departmental recommendation. (0.7+1)*

**MATH F156S**        **Precalculus Skills Workshop**  
**1 Credit**  
 Directed study of topics in precalculus, emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in precalculus and mathematics-based courses. Note: Credit may be earned for taking MATH F156R or MATH F156S, but not for both. Graded Pass/Fail. *Prerequisites: Previous W or grade below C- in MATH F165X; or placement into MATH F156S; or departmental recommendation. This course requires concurrent enrollment in MATH F156X. (0.5+1.5)*

**MATH F156X**        **Precalculus (m)**  
**4 Credits**  
 Various classes of functions and their graphs are explored numerically, algebraically and graphically. Function classes include polynomial, rational, exponential, logarithmic and trigonometric. Skills and concepts needed for calculus are emphasized. This class is intended for students intending to take calculus I. Note: Only seven credits total may be earned from MATH F151X, MATH F152X and MATH F156X. *Prerequisites: Placement into MATH F156X. (4+1)*

## MATHEMATICS (MATH)

**MATH F211 Mathematics for Elementary School Teachers (m)**  
**3 Credits**  
Elementary set theory, numeration systems, and algorithms of arithmetic, divisors, multiples, integers and introduction to rational numbers. Emphasis on classroom methods. *Prerequisites: MATH F122X; MATH F151X; MATH F156X; or placement. Restricted to Elementary Education majors; others by permission of instructor.* (3+1)

**MATH F212 Mathematics for Elementary School Teachers II (m)**  
**3 Credits** Offered Spring  
A continuation of MATH F211. Real number systems and subsystems, logic, informal geometry, metric system, probability and statistics. Emphasis on classroom methods. *Prerequisites: MATH F211.* (3+1)

**MATH F222X 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 F222X, MATH F232X or MATH F251X. *Prerequisites: MATH F122X; or MATH F151X; or placement.* (4+0)

**MATH F232X Calculus for Life Sciences (m)**  
**3 Credits**  
Differentiation and integration with applications to the life sciences. Note: No credit may be earned for more than one of MATH F251X, MATH F222X or MATH F232X. *Prerequisites: MATH F151X; MATH F152X; or placement.* (3+0)

**MATH F251R Prep for Calculus**  
**1 Credit**  
An intensive, individualized review of prerequisite topics needed in calculus along with small group practice of related functions topics. Emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in calculus. Note: Credit may be earned for taking MATH F251R or MATH F251S, but not for both. Graded Pass/Fail. *Prerequisites: Previous W or grade below C- in MATH F251; or placement into MATH F251R; or departmental recommendation.* (0.7+1)

**MATH F251S Calculus I Skills Workshop**  
**1 Credit**  
Directed study of topics in MATH F251X, emphasis will be placed on problem solving and mathematical communication. Also included will be instruction on how to be successful in calculus I and mathematics-based courses. Note: Credit may be earned for taking MATH F251R or MATH F251S, but not for both. Graded Pass/Fail. *Prerequisites: Previous W or grade below C- in MATH F251X; or placement into MATH F251S; or departmental recommendation. This course requires concurrent enrollment in MATH F251X.* (0.5+1.5)

**MATH F251X Calculus I (m)**  
**4 Credits**  
A first course in single-variable calculus. Topics include limits; continuity and differentiation of functions; applications of the derivative to graphing, optimization, and rates of change; definite and indefinite integration; and the Fundamental Theorem of Calculus. Note: No credit may be earned for more than one of MATH F251X, MATH F222X or MATH F232X. *Prerequisites: MATH F151X; MATH F152X; or MATH F156X; or placement.* (4+1)

**MATH F252X Calculus II (m)**  
**4 Credits**  
Further topics in single-variable calculus, including techniques of integration; applications of integration; convergence of sequences and series; parameterized curves; and polar coordinates. *Prerequisites: MATH F251X.* (4+1)

**MATH F253X Calculus III (m)**  
**4 Credits**  
Multivariable calculus. Topics include vectors in 2- and 3-dimensions; differential calculus of functions of several variables; multiple integration; vector calculus, including Green's and Stokes' Theorem; and applications. *Prerequisites: MATH F252X.* (4+0)

**MATH F265 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 F251X; MATH F252X, may be taken concurrently; or permission of instructor.* (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, Galois theory, logic or other areas of mathematics. May be repeated with permission of instructor for a total of nine credits. *Prerequisites: MATH F265; 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 F253X.* (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 F265; MATH F314; or permission of instructor. Recommended: MATH F253X.* (3+0)

**MATH F306 Introduction to the History and Philosophy of**  
**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 F253X; 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 F252X; 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 F252X.* (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 F265; 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 F265; or permission of instructor.* (3+0)

**MATH F371**      **Probability**  
**3 Credits**      Offered Fall Odd-numbered Years  
 Probability spaces, conditional probability, random variables, continuous and discrete distributions, expectation, moments, moment generating functions and characteristic functions. *Prerequisites: MATH F253X.* (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 F253X; MATH F265.* (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 F253X; MATH F265. Recommended: MATH F314 and/or MATH F405.* (3+0)

**MATH F405 W**    **Abstract Algebra**  
**3 Credits**      Offered Spring  
 Theory of groups, rings and fields. *Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; MATH F265; or permission of instructor. Recommended: MATH F307 and/or MATH F314.* (3+0)

**MATH F408**      **Mathematical Statistics**  
**3 Credits**      Offered Spring Even-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; 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 F265; 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 F252X; 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 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 F614**      **Numerical Linear Algebra**  
**3 Credits**      Offered Alternate Fall  
 Algorithms and theory for stable and accurate computation using matrices and vectors on computers. Matrix factorizations, direct and iterative methods for solving linear systems, least squares, eigenvalue and singular value decompositions. Practical implementation and application of algorithms. *Prerequisites: MATH F314 or equivalent; or permission of instructor. Recommended: MATH F421 or MATH F401.* (3+0)

**MATH F615**      **Numerical Analysis of Differential Equations**  
**3 Credits**      Offered Alternate Spring  
 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,

## MATHEMATICS (MATH) — MECHANICAL ENGINEERING (ME)

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 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 Spring Odd-numbered Years  
Advanced topics which may be chosen from group theory, Galois theory, commutative or non-commutative algebra, algebraic geometry, homological algebra or other areas. *Prerequisites:* MATH F631; or permission of instructor. (3+0)

**MATH F641 Real Analysis**  
4 Credits Offered Fall Odd-numbered Years  
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; 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; or MATH F404; or permission of instructor. (4+0)

**MATH F658 Topics in Geometry**  
3 Credits Offered Fall Even-numbered Years  
Elective topics in geometry. Offering can include configurations of points and lines; topology and differential geometry of surfaces; polyhedra and polytopes. *Prerequisites:* Linear algebra; geometry; undergraduate real analysis; undergraduate abstract algebra. (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 Graph Theory**  
3 Credits Offered Fall Odd-numbered Years  
A survey of modern techniques in graph theory; topics may include graphs and digraphs, trees, spanning trees, matchings, graph connectivity, graph coloring, planarity, cycles, and extremal problems. *Prerequisites:* MATH F314; MATH F320; or permission of instructor. (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. *Prerequisite or 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. *Prerequisites:* Mechanical Engineering major. (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 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 F405 Computer Aided Design**  
3 Credits Offered Every Other Fall

Introduction to principles of computer aided design and engineering. Applications of software and hardware in solid modeling, design analysis, motion analysis, rapid prototyping, and interface between computer aided design and computer aided manufacturing. *Prerequisites: Senior standing or permission of instructor.* (1.5+4.5)

**ME F406 Computer Aided Manufacturing**  
3 Credits Offered Every Other Spring

Introduction to computer aided manufacturing (CAM). This includes the principles of computer aided process planning (CAPP) and an introduction to computer numerical control (CNC) tools used in manufacturing. Emphasis will be on methodology with hands-on applications of computer software and specific machine tools. Special fees apply. *Prerequisites: ME F321; senior standing or instructor permission.* (1.5+4.5)

**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)

**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 Heating, Ventilating and Air Conditioning Systems**  
3 Credits Offered Fall

Introduction to the design of space conditioning systems. Moist air properties, building heating and cooling load, ventilating, air conditioning calculations. Fluids, pumps and piping designs. Fans and building air distribution. *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; ES F341; ME F313; ME F441.* *Prerequisite or 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 F443 Fluid Mechanics and Heat Transfer Characteristics of Nanofluids**  
3 Credits Offered As Demand Warrants

Description of nanofluids, nanostructured materials and dispersion in base fluids. Thermophysical properties: density, viscosity, thermal conductivity and specific heat. Theoretical equations and empirical correlations for properties. Principles of measurements of properties. Fluid dynamic losses and pumping power required for nanofluid flow in heat transfer systems. Experimental methods of determining the convective heat transfer coefficient of nanofluids. Practical application to heat exchangers in industries. Nanofluids flows in mini- and microchannels. *Prerequisites: ES F341; ME F441; senior standing or permission of instructor.* Stacked with ME F643. (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 F341 or concurrent enrollment; 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.* *Prerequisite or 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; MATH F302* (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.* *Prerequisite or co-requisite: 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 F252X; 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 F486 Senior Design**  
1 Credit Offered Fall

The course is focused on pursuing the design of a real or simulated project which is selected jointly by students, project advisors and/or the instructor.

## MECHANICAL ENGINEERING (ME)

Emphasis will be on the design of practical engineering systems and/or components which integrate engineering knowledge and skills that students have acquired. The principles of design process will be introduced in lecture. Each design team is to generate design concepts, select the best concept and work towards completing a design. *Prerequisites: COMM F131X or COMM F141X; ENGL F211X or ENGL F213X; senior standing. Prerequisite or co-requisite: ME F441; or permission of instructor.* (1+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. Special fees apply. *Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor; ME F441; ME F486; senior standing. Prerequisite or 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 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)

### 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 F643 Fluid Mechanics and Heat Transfer Characteristics of Nanofluids 3 Credits Offered As Demand Warrants

Description of nanofluids, nanostructured materials and dispersion in base fluids. Thermophysical properties: density, viscosity, thermal conductivity and specific heat. Theoretical equations and empirical correlations for properties. Principles of measurements of properties. Fluid dynamic losses and pumping power required for nanofluid flow in heat transfer systems. Experimental methods of determining the convective heat transfer coefficient of nanofluids. Practical application to heat exchangers in industries. Nanofluids flows in mini- and microchannels. *Prerequisites: ES F341; ME F441; graduate standing or permission of instructor.* Stacked with ME F443. (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 F252X; 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)

**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. Special fees apply. *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. (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. (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. (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. (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; 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

## MILITARY SCIENCE (MILS) — MINING ENGINEERING (MIN)

evaluate their own leadership values, attributes, skills and actions. Primary attention is given to preparation for LDAC and the development of leadership abilities. *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. *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. *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. *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. *Prerequisites: Sophomore standing or permission of instructor.* Cross-listed with HIST F442. (3+0)

## 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 F253X; 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 F253X; 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 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)

<b>MIN F202</b> <b>3 Credits</b>	<b>Mine Surveying</b> Offered Fall	<b>MIN F407 W</b> <b>3 Credits</b>	<b>Mine Reclamation and Environmental Management</b> Offered Fall Even-numbered Years
Surveying principles for surface and underground control of mining properties. Field and office procedures for preparation of maps and engineering data. Special fees apply. <i>Prerequisites: MATH F151X, MATH F152X or equivalent.</i> (2+3)		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. <i>Prerequisites: CHEM F106X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor. Recommended: ES F341.</i> (3+0)	
<b>MIN F225</b> <b>2 Credits</b>	<b>Quantitative Methods in Mining Engineering</b> Offered Fall	<b>MIN F408 O</b> <b>3 Credits</b>	<b>Mineral Valuation and Economics</b>
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. <i>Prerequisites: MATH F251X or equivalent; or permission of instructor.</i> (2+0)		Introduction to engineering economics, ore sampling and reserve calculations, and mine feasibility studies. <i>Prerequisites: COMM F131X or COMM F141X; GE F375 or MIN F301.</i> (3+0)	
<b>MIN F226</b> <b>2 Credits</b>	<b>Mine Development</b> Offered Spring	<b>MIN F409</b> <b>3 Credits</b>	<b>Operations Research and Computer Applications in Mineral Industry</b>
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. <i>Prerequisites: MIN F103; MIN F225; or permission of instructor. Recommended: MATH F251X.</i> (2+0)		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. <i>Prerequisites: MIN F225; MIN F454 or equivalent; or permission of instructor.</i> (3+0)	
<b>MIN F301</b> <b>3 Credits</b>	<b>Mine Plant Design</b>	<b>MIN F415</b> <b>3 Credits</b>	<b>Coal Preparation</b>
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. <i>Prerequisites: ES F208 and ES F307. Recommended: ES F341.</i> (3+0)		Unit operations, flowsheets, washability characteristics and control by sink-float methods for coal preparation plants. Market requirements and economics of preparation. <i>Prerequisites: MIN F313 or graduate standing.</i> (2+3)	
<b>MIN F302</b> <b>3 Credits</b>	<b>Underground Mine Environmental Engineering</b>	<b>MIN F443</b> <b>3 Credits</b>	<b>Principles and Applications of Industrial Explosives</b>
Analysis of underground mine ventilation systems, ventilation planning, design and engineering control, mine ventilation network. Special fees apply. <i>Prerequisites: MIN F103; MIN F226; ES F341</i> (2+3)		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. <i>Prerequisites: MIN F370 or permission of instructor.</i> (3+0)	
<b>MIN F313</b> <b>3 Credits</b>	<b>Introduction to Mineral Preparation</b> Offered Fall Odd-numbered Years	<b>MIN F444</b> <b>3 Credits</b>	<b>Accidents, Emergency and Safety Management in Mines</b> Offered Alternate Fall
Elementary theory and principles of unit processes of liberation, concentration and solid-fluid separation as applied to mineral beneficiations. Special fees apply. <i>Prerequisites: Junior standing or permission of instructor.</i> (2+3)		Accident statistics, accident investigation and prevention, major provisions of current laws, rule-making procedures, mine fires and explosions, causes and prevention, loss control principles and methods, emergency evacuation, emergency response and emergency preparedness, safety management systems and behavioral science applications. <i>Prerequisites: MIN F302; MIN F454, concurrently.</i> (3+0)	
<b>MIN F370</b> <b>3 Credits</b>	<b>Rock Mechanics</b>	<b>MIN F454</b> <b>3 Credits</b>	<b>Underground Mining Methods</b>
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. Special fees apply. <i>Co-requisite: ES F331.</i> (2+3)		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. <i>Prerequisites: MIN F301; MIN F302; MIN F370.</i> (3+0)	
<b>MIN F380</b> <b>1 Credit</b>	<b>Computer Aided Orebody Modeling</b> Offered Fall	<b>MIN F482</b> <b>3 Credits</b>	<b>Computer-Aided Mine Design — VULCAN</b> 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. <i>Prerequisites: GEOS F332; or permission of instructor.</i> (2+3)		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. <i>Prerequisites: Junior, senior or graduate standing in Mining Engineering, Geological Engineering, or permission of instructor.</i> Stacked with MIN F682. (2+3)	
<b>MIN F401</b> <b>1 Credit</b>	<b>Mine Site Field Trips</b>	<b>MIN F484</b> <b>2 Credits</b>	<b>Surface Mining Methods</b> Offered Spring Even-numbered Years
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. <i>Prerequisites: MIN F202; MIN F301; MIN F302; MIN F370.</i> (0.5+3)		Modern methods of surface mine design. Strip and open pit optimization techniques. Production planning and scheduling. Use of mine design software. <i>Prerequisites: MIN F225; MIN F226; Junior or senior standing in mining engineering or permission of instructor.</i> (2+0)	

## MINING ENGINEERING (MIN) — MUSEUM RESEARCH APPRENTICESHIP PROGRAM (MRAP)

### MIN F485 Mining Engineering Exit Exam 0 Credits

An Exit interview will be conducted to obtain feedback on the program. 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)

### 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 F253X, 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 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 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 F674 Advanced Ground Control 3 Credits

A study of current rock mechanic problems related to advances in mining and construction technologies. Particular emphasis on the importance of rock and frozen ground properties and stress evaluation in designing and monitoring stability of structures for gas, oil and radioactive materials storage, geothermal energy recovery, solution mining, and those exposed to rock outbursts and earthquakes. Rock and frozen ground properties related to other dynamic loading conditions, such as in blasting, are also discussed. *Prerequisites: MIN F370 or equivalent or permission of instructor.* (0+0)

### 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)

## MUSEUM RESEARCH APPRENTICESHIP PROGRAM

### MRAP F288 Museum Research Apprentice I 1-2 Credits

Offered Fall and Spring

Provides opportunities for undergraduate student research or scholarship in museum-based subjects not available in typical undergraduate courses. Students are required to perform research tasks associated with specimens or objects and their associated data and to turn in a final report. Opportunities range across several museum-based disciplines (archaeology, botany, earth science, entomology, ethnology and history, film, fine art, ichthyology, mammalogy, informal science education, and ornithology). Course may be repeated. Graded Pass/Fail. *Prerequisite: Instructor permission. Student must contact a potential mentor before enrolling to determine whether matching opportunities exist.* (0-1+0+3-6)

### MRAP F488 Museum Research Apprentice II 1-2 Credits

Offered Fall and Spring

Provides opportunities for advanced undergraduate student research or scholarship in museum-based subjects not available in typical undergraduate courses, building upon prior experience. Students are required to perform tasks associated with specimens, objects, and associated data and to turn in a final report. Opportunities range across several museum-based disciplines (archaeology, botany, earth science, entomology, ethnology and history, film, fine art, ichthyology, mammalogy, informal science education, and ornithology). Course repeatable to a maximum of 12 credits. Graded Pass/Fail. *Prerequisite: Permission of instructor. Student must contact potential mentor before enrolling to determine whether experience is sufficient and matching opportunities exist.* (0-1+0+3-6)

## 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. (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)

## 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, CDs, 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. (2+0)

## MUS F131 Basic Music Theory I (h)

3 Credits

Offered Fall

Intensive training in aspects of tonal harmony. Emphasis on acquiring skills in identification and notation of pitch, rhythm, scale, key, with introduction to principles of chord functions and techniques of harmonization. *Prerequisites: Music majors must be concurrently enrolled in MUS F133.* (3+0)

## MUS F132 Basic Music Theory II (h)

3 Credits

Offered Spring

Emphasis on developing skills in voice leading, part writing and acquiring techniques for analysis of tonal harmony and musical form. *Prerequisites: MUS F131 or equivalent. Music majors must be concurrently enrolled in MUS F134.* (3+0)

## MUS F133 Basic Ear Training I (h)

2 Credits

Offered Fall

This course is an intensive training in aural skills acquisition, including an introduction to solfege, sight-reading, rhythmic and melodic dictation.

Includes computer-assisted instruction. *Prerequisites: Music majors must be concurrently enrolled in or have completed MUS F131.* (2+0)

## MUS F134 Basic Ear Training II (h)

2 Credits

Offered Spring

This course has an emphasis on aural skills acquisition, with further development of skills in sight-reading rhythmic, melodic and harmonic dictation. Includes computer-assisted instruction. *Prerequisites: MUS F133 or equivalent; music majors must be concurrently enrolled in or have completed MUS F132.* (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 F152 Functional Piano I (h)

1 Credit

Offered Fall

Emphasis on beginning keyboard performance skills, sight-reading, harmonization and transposition. Course may not be audited. Special fees apply. *Prerequisites: MUS F131 or equivalent, or concurrent enrollment. For music majors only with permission of instructor required.* (1+0)

## MUS F153 Functional Piano II (h)

1 Credit

Emphasis on intermediate keyboard performance skills, sight-reading, harmonization and transposition. Course may not be audited. Special fees apply. *Prerequisites: MUS F152; for music majors only; permission of instructor required.* (1+0)

## MUS F154 Functional Piano III (h)

1 Credit

Offered Fall

Emphasis on upper-intermediate keyboard performance skills, sight-reading, harmonization and transposition. Course may not be audited. Special fees apply. *Prerequisites: MUS F153; for music majors only; permission of instructor required.* (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. *Prerequisites: Placement in ENGL F111X or higher; sophomore standing; or permission of instructor.* Cross-listed with ART F200X; THR F200X. (3+0)

## MUSIC (MUS)

**MUS F203** Fairbanks Symphony Orchestra (h)  
**1 Credit**  
Course may be repeated for credit. *Prerequisites: Admission by audition.* (0+3)

**MUS F205** Wind Symphony (h)  
**1 Credit**  
The wind symphony is a large ensemble comprised of wind and percussion instruments. It serves as a large ensemble in the department of music. The ensemble performs several concerts per semester of literature chosen from a variety of contemporary and traditional pieces written for or transcribed for band. This course may not be audited. *Prerequisites: Admission by audition; permission of instructor.* (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. May be repeated for credit. *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. May be repeated for credit. *Prerequisites: Admission by audition.* (0+3)

**MUS F221** History of Western Music I (h)  
**3 Credits** Offered Fall  
A survey of musical eras, styles, genres, historical figures and social and cultural contexts that have significantly contributed to the development of art music in Western Europe from antiquity through the eighteenth century. The lecture-based course also emphasizes music listening skills and an introduction to resources and methods in music history research. *Prerequisites: MUS F132; or permission of instructor.* (3+0)

**MUS F222** History of Western Music II (h)  
**3 Credits**  
A survey of musical eras, styles, genres, historical figures and social and cultural contexts that have significantly contributed to the development of art music in Western Europe from the mid-eighteenth century to the present day. Further emphasizes music listening skills and an introduction to resources in music history research. *Prerequisites: MUS F221; or permission of instructor.* (3+0)

**MUS F223** Alaska Native Music (h)✳️  
**3 Credits**  
Introductory course devoted to the study of indigenous musical cultures throughout Alaska and neighboring regions. Emphasis on musical systems in terms of their respective sounds and their relationship to culture and society, cross-cultural comparisons and a focus on both past and present musical styles. Cross-listed with ANS F223; NORS F223. (3+0)

**MUS F231** Advanced Music Theory I (h)  
**2 Credits** Offered Fall  
This course is an intensive study of chromatic harmony and its functions in tonal music, with an introduction to musical form. The course emphasizes analytical techniques and score study. *Prerequisites: MUS F132 or equivalent; music majors must be concurrently enrolled in or have completed MUS F233.* (2+0)

**MUS F232** Advanced Music Theory II (h)  
**2 Credits** Offered Spring  
This course has an emphasis on chromatic harmony and its functions in music of the late 19th and early 20th centuries. Includes an introduction to techniques and concepts in post-tonal music. *Prerequisites: MUS F231 or equivalent; music majors must be concurrently enrolled in or have completed MUS F234.* (2+0)

**MUS F233** Advanced Ear Training I  
**1 Credit** Offered Fall  
This course emphasizes aural skills acquisition with advanced techniques in aural perception, sight-reading, dictation and chromatic materials. Includes computer-assisted instruction. *Prerequisites: MUS F134; music majors must be concurrently enrolled in or have completed MUS F231.* (1+0)

**MUS F234** Advanced Ear Training II  
**1 Credit**  
This course emphasizes aural skills acquisition, with further development of advanced techniques involving chromaticism, rhythms, modality, sight-reading and dictation. Includes computer-assisted instruction. *Prerequisites: MUS F233; music majors must be concurrently enrolled in or have completed MUS F232.* (1+0)

**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 requirement. Graded Pass/Fail. *Prerequisites: MUS F154; or 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)

<b>MUS F317</b> <b>1 Credit</b>	<b>Arctic Chamber Orchestra (h)</b>	<b>MUS F422 W</b> <b>3 Credits</b>	<b>Music in the 17th and 18th Centuries (h)</b> Offered Spring; As Demand Warrants
The touring group of the Fairbanks Symphony Orchestra. Must be a member of the Fairbanks Symphony Orchestra. (MUS F203-EV1). <i>Prerequisites: By audition only.</i> (0+3)		A study of style, form and performance practices in a variety of vocal and instrumental genres throughout the Baroque and Classical eras, emphasizing musical developments in Italy, England, France, Germany, Austria and cross-cultural influences. <i>Prerequisites: ENGL F211X or ENGL F213X; MUS F222; or permission of instructor.</i> (3+0)	
<b>MUS F331</b> <b>3 Credits</b>	<b>Form and Analysis (h)</b> Offered Spring, As Demand Warrants	<b>MUS F423 W</b> <b>3 Credits</b>	<b>Music of the 19th Century (h)</b> Offered Fall; As Demand Warrants
This course emphasizes score study, analytical techniques and critical listening skills as applied to small and large forms in works from various musical genres and style periods. <i>Prerequisites: MUS F232 or permission of instructor.</i> (3+0)		A study of musical and cultural trends in Western European art music of the nineteenth century emphasizing a variety of representative works by significant Romantic-era composers. <i>Prerequisites: ENGL F211X or ENGL F213X; MUS F222; or permission of instructor.</i> (3+0)	
<b>MUS F332</b> <b>3 Credits</b>	<b>Introduction to Computer-based Music Technology (h)</b> Offered Spring	<b>MUS F424 W</b> <b>3 Credits</b>	<b>Music since 1900 (h)</b> Offered Spring; As Demand Warrants
An introduction to music notation software and audio equipment to enable students to create, arrange and edit music in digital formats. May be repeated for credit. <i>Prerequisites: MUS F232; or permission of instructor.</i> (3+0)		A study of works by significant composers representative of modern and post-modern styles and perspectives. <i>Prerequisites: ENGL F211X or ENGL F213X; MUS F222; or permission of instructor.</i> (3+0)	
<b>MUS F351 O</b> <b>3 Credits</b>	<b>Conducting (h)</b>	<b>MUS F426</b> <b>2 Credits</b>	<b>Music Literature (h)</b>
Principles of conducting; interpretation of vocal and instrumental ensemble music. <i>Prerequisites: COMM F131X or COMM F141X; MUS F232.</i> (3+0)		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. <i>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.</i> (2+0)	
<b>MUS F361</b> <b>2 or 4 Credits</b>	<b>Private Lessons (h)</b>	<b>MUS F431</b> <b>3 Credits</b>	<b>Counterpoint (h)</b> Offered Fall, As Demand Warrants
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. <i>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.</i> (2 or 4+0)		This course emphasizes score study, composition exercises and techniques for the analysis of contrapuntal practices prevalent in music of the late Baroque era. <i>Prerequisite: MUS F232 or permission of instructor.</i> (3+0)	
<b>MUS F362</b> <b>2 or 4 Credits</b>	<b>Private Lessons (h)</b>	<b>MUS F432</b> <b>3 Credits</b>	<b>Orchestration and Arranging (h)</b> Offered Fall, As Demand Warrants
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. <i>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.</i> (2 or 4+0)		This course has an emphasis on acquisition of techniques used in arranging and orchestrating music for a variety of instrumental and vocal ensembles. Includes score study, listening exercises and composition exercises. <i>Prerequisite: MUS F232 or permission of instructor. Recommended: MUS F322.</i> (3+0)	
<b>MUS F390</b> <b>0 Credits</b>	<b>Junior Recital</b>	<b>MUS F433</b> <b>2-3 Credits</b>	<b>Seminar in Musical Composition (h)</b>
Half-length solo music performance recital. Graded Pass/Fail. <i>Prerequisites: MUS F222; MUS F232; MUS F262; permission of instructor.</i> (0+0)		Development of compositional skills based upon the works of predominately 20th-century composers. May be repeated for credit. <i>Prerequisites: MUS F232 or equivalent; permission of instructor.</i> (2-3+0)	
<b>MUS F410 W</b> <b>3 Credits</b>	<b>Women in Music History (h)</b>	<b>MUS F434</b> <b>3 Credits</b>	<b>Advanced Harmonic Analysis (h)</b>
Lives and works of female musicians, composers and performers will be traced from the earliest days of the ancient and mythological periods through the medieval, Baroque, Classical and Romantic periods with special emphasis on composers of the 20th-century. <i>Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; junior standing; or permission of instructor.</i> Cross-listed with SGS F410. (3+0)		This course emphasizes advanced score study analytical techniques in the study of tonal music from the Baroque, Classical, Romantic and early 20th century periods. <i>Prerequisites: MUS F232 or permission of instructor.</i> (3+0)	
<b>MUS F421 W</b> <b>3 Credits</b>	<b>Music Before 1620 (h)</b> Offered Fall; As Demand Warrants	<b>MUS F435</b> <b>2-4 Credits</b>	<b>Private Lessons in Music Composition (h)</b> Offered As Demand Warrants
A study of music in the Western European tradition from its origins in Greek antiquity through the Renaissance and the emergence of opera in the early seventeenth century. The study includes prominent composers, early musical forms and genres, original sources in translation and developments in music notation and early musical instruments. <i>Prerequisites: ENGL F211X or ENGL F213X; MUS F222; or permission of instructor.</i> (3+0)		Private instruction in advanced music composition consisting of one private lesson per week. Repeatable for credit. <i>Prerequisites: MUS F433 or equivalent; audition; permission of instructor. Course may not be audited.</i> (1-2+3)	
<b>MUS F461</b> <b>2 or 4 Credits</b>	<b>Private Lessons (h)</b>	<b>Private Lessons (h)</b>	
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. <i>Prerequisites: Admission by audition. Special permission required. Note: Course may not be audited. Credit-No Credit</i>		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. <i>Prerequisites: Admission by audition. Special permission required. Note: Course may not be audited. Credit-No Credit</i>	

## MUSIC (MUS) — MUSIC EDUCATION (MUED)

*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 F476 Senior Project 3 Credits

Preparation and presentation of a senior project based on a topic of the student's choosing in consultation with the instructor. Project may take the form of a research paper, original music composition, music performance as a lecture-recital, or some combination of these as appropriate to the topic. **Prerequisites:** *Senior standing and permission of instructor. (1+0+4)*

### 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 2 Credits

Students will gain experience with materials, techniques bibliographic sources and procedures for conducting scholarly research and writing music. **Prerequisites:** *Graduate standing and permission of the instructor. (2+0)*

### MUS F606 Advanced Chamber Music 1 Credit

Offered Fall and Spring  
Emphasizing advanced performance skills and experience in ensemble settings, including string, woodwind, brass, vocal chamber music, piano chamber music and accompanying. Course may not be audited. **Prerequisites:** *MUS F307; graduate standing; and permission of instructor. (1+0)*

### 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 F632 Topics in Music Theory 3 Credits

Offered Spring  
A detailed study of selected topics in music theory, including aspects of common-practice harmony, musical form, techniques for analysis, and historical perspectives on the evolution of theory concepts and constructs. **Prerequisites:** *Graduate standing and permission of the 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 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. (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 School Music Methods. (0.5+1.5)

**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)

**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 F111 Introduction to Sustainability Science****3 Credits**

Offered Spring

Sustaining the health, wellbeing, and productivity of social-ecological systems requires integrated assessments of social, economic, and ecological sustainability challenges. Meeting these challenges often requires action plans that move from understanding theory to the implementation of new policies and facilitation of behavioral change. This course introduces the principles that form the basis of sustainability science, with an emphasis on natural resource management issues. *Prerequisite: NRM F101; placement in ENGL F111X.* (3+0)

**NRM F150 Plant Propagation I: Seeds and Seed Germination****1 Credit**

Principles and practices of plant propagation useful in horticulture, botany, forestry, agronomy, revegetation and land reclamation projects and plant research. Emphasis on seed and fern spore biology, seed dormancy mechanisms, germination techniques, and the seed industry of Alaska native and economically useful plants. *Recommended: a high school course in biology.* (1+0)

**NRM F151 Plant Propagation II: Vegetative Propagation****1 Credit**

Principles and practices of plant propagation useful in horticulture, botany, forestry, agronomy, revegetation and land reclamation projects and plant research. Course will cover methods of vegetative propagation including

cuttings; layering; grafting; bulb, corm and tuber propagation; and micro propagation through tissue culture. Emphasis will be on Alaska native and economically useful plants. *Recommended: basic course in high school biology.* (1+0)

**NRM F152 Plant Propagation Practicum****1 Credit**

Methods of plant propagation useful in horticulture, botany, forestry, agronomy, revegetation and land reclamation projects and plant research. The practicum will emphasize hands on applications of propagation methods for commercial, educational and research applications. Emphasis will include horticultural seed production, landscape seeding and restoration practices, intermittent mist propagation systems, spore propagation and commercial micro-propagation (tissue culture). *Prerequisites: NRM F150 and F151.* (0+0+3)

**NRM F154 Wild and Cultivated Berries of Alaska****1 Credit**

Introduction to cultivated fruit crops and Alaska wild berries. Course includes plant biology, management of wild berry stands, field cultivation and uses of fruits including strawberries, blueberries, currants, gooseberries, cloudberries, raspberries and more. *Recommended: High school biology; or completion of master gardener program.* (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. *Prerequisites: Sophomore class standing.* (3+0)

**NRM F210 Principles of Sustainable Agriculture****3 Credits**

Offered Fall

Development of a basic understanding of sustainable agriculture concepts including exposure to economic, social, and environments principles and ideas of sustainable agricultural practices. Agroecology is introduced as a backdrop for the development of sustainable techniques for soil, plant, and animal agriculture. Throughout the semester, sustainable agriculture concepts and principles will be related to current issues such as population growth, resource use and availability, and changing social structures and preferences. *Prerequisites: BIOL F101X, BIOL F103X, BIOL F104X, BIOL F115X, BIOLS F116X, or BIOL F120X.* (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)

## NATURAL RESOURCES MANAGEMENT (NRM)

**NRM F220 Introduction to Animal Science**  
**3 Credits** Offered Spring  
 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: NRM F210* (3+0)

**NRM F240 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: MATH F151X*. (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; NRM F375; 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**  
**1-3 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 only. Course may be repeated for credit up to a maximum of 6 credits. *Prerequisites: NRM F101; junior standing with 3.0 GPA; permission of instructor; an approved internship plan*. (0+0+3-10)

**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 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 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 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 PCs or Unix workstations desirable*. Cross-listed with GEOG F338. (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 Even-numbered Years  
 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; STAT F200X; junior standing*. (3+0)

**NRM F366 Survey Research in Natural Resources Management**  
**3 Credits** Offered Spring  
 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: NRM F101; STAT F200X* (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*. (2+3)

**NRM F375 Natural Resource Ecology**  
**3 Credits** Offered Fall  
 Basic ecology concepts, including physical (wind, temperature, water, etc.), biotic (population and community dynamics), genetic successional and landscape dynamics will be covered. 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. *Prerequisites: NRM F240*. (3+0)

<p><b>NRM F380 W</b>      <b>Soils and the Environment</b>  <b>3 Credits</b>      Offered Fall</p> <p>Soil development and classification; physical and chemical properties; biological activity; water movement and nutrient cycling in natural and manipulated ecosystems. <i>Prerequisites: CHEM F105X; ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.</i> (2+3)</p>	<p><b>NRM F452</b>      <b>Forest Health and Protection</b>  <b>3 Credits</b>      Offered Spring Even-numbered Years</p> <p>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. <i>Prerequisites: BIOL F115X; BIOL F116X; BIOL F239; NRM F251; NRM F375 or BIOL F371; or permission of instructor.</i> (3+0)</p>
<p><b>NRM F403 W,O</b>      <b>Environmental Decision Making</b>  <b>3 Credits</b>      Offered Fall</p> <p>Analysis of philosophical/ethical, economic, scientific and political foundations of diverse natural resource management perspectives. <i>Prerequisites: COMM F131X or COMM F141X; NRM F101; junior standing; or permission of instructor.</i> (3+0)</p>	<p><b>NRM F453</b>      <b>Harvesting and Utilization of Forest Products</b>  <b>3 Credits</b>      Offered Fall Odd-numbered Years</p> <p>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. <i>Prerequisites: NRM F101 or permission of instructor.</i> (2+3)</p>
<p><b>NRM F405 W</b>      <b>Senior Thesis in Natural Resources Management I</b>  <b>2 Credits</b></p> <p>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. <i>Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; NRM core; junior standing.</i> (2+0)</p>	<p><b>NRM F454</b>      <b>Comparative Farming and Sustainable Food Systems</b>  <b>3 Credits</b>      Offered Fall</p> <p>Principles of food systems geography and food security. Cross-cultural examination of dietary traditions, poverty, hunger, equity and food access and distribution. Comparison of multiple varieties and scales of agricultural systems in the context of social, ecological and economic sustainability. Considers Alaskan and other high-latitude food systems, including country food, wild game harvest and rural to urban nutrition transition. <i>Junior standing and ENGL F211X or F213X; or permission of instructor.</i> Cross-listed with GEOG F454 and CCS F454. (3+0)</p>
<p><b>NRM F407</b>      <b>Environmental Law</b>  <b>3 Credits</b>      Offered Spring Odd-numbered Years</p> <p>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. <i>Prerequisites: Junior or senior class standing or permission of instructor.</i> (3+0)</p>	<p><b>NRM F461</b>      <b>Interpretive Services</b>  <b>3 Credits</b>      Offered As Demand Warrants</p> <p>Naturalist and other visitor programs in outdoor recreation areas: philosophy, planning and development of interpretive programs; resources, agencies, users, interpretive media and program evaluation. <i>Prerequisites: Junior standing or permission of instructor.</i> (3+0)</p>
<p><b>NRM F410</b>      <b>Numerical Methods for Natural Resources Management</b>  <b>4 Credits</b>      Offered Fall</p> <p>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. <i>Recommended: MATH F314</i> (3+3)</p>	<p><b>NRM F464</b>      <b>Wilderness Management</b>  <b>3 Credits</b>      Offered Spring</p> <p>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. <i>Prerequisites: A basic course in ecology, resource management, or permission of instructor.</i> Cross-listed with GEOG F464. (3+0)</p>
<p><b>NRM F430</b>      <b>Resource Management Planning</b>  <b>3 Credits</b>      Offered Spring</p> <p>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. <i>Prerequisites: Senior standing or permission of instructor.</i> Stacked with NRM F630. (3+0)</p>	<p><b>NRM F466</b>      <b>Environmental Soil Chemistry</b>  <b>3 Credits</b>      Offered Spring Odd-numbered Years</p> <p>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. <i>Prerequisites: CHEM F105X; CHEM F106X; NRM F380.</i> (2+3)</p>
<p><b>NRM F435</b>      <b>GIS Analysis</b>  <b>4 Credits</b>      Offered Spring</p> <p>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)</p>	<p><b>NRM F470</b>      <b>Terrestrial Carbon Management</b>  <b>3 Credits</b>      Offered Spring</p> <p>Climate change and its relationship to carbon dynamics have become elements of natural resource management options for land owners within the state and across the country and the globe. The course will present a broad scale description of the direction for forest carbon management and proposed methods for inventorying and documenting carbon dynamics attached to industry and down to the landowner. <i>Prerequisites: BIOL F271 or NRM F375 or permission of instructor</i> (3+0)</p>
<p><b>NRM F440</b>      <b>Silviculture</b>  <b>3 Credits</b>      Offered Fall Even-numbered Years</p> <p>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. <i>Prerequisites: NRM F251; NRM F375 or BIOL F371; junior standing; or permission of instructor.</i> (2+3)</p>	<p><b>NRM F480</b>      <b>Soil Management for Quality and Conservation</b>  <b>3 Credits</b>      Offered Fall Odd-numbered Years</p> <p>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. <i>Prerequisites: NRM F380.</i> (3+0)</p>
<p><b>NRM F450</b>      <b>Forest Management</b>  <b>3 Credits</b>      Offered Spring Odd-numbered Years</p> <p>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. <i>Prerequisites: ECON F235; NRM F251; NRM F240; Junior standing.</i> (3+0)</p>	

## NATURAL RESOURCES MANAGEMENT (NRM)

### NRM F483 W Research Design, Writing and Presentation Methods 3 Credits Offered Fall

Capstone research seminar for Geography and Natural Resources Management majors. Focuses on designing an individual research project or thesis in coordination with a faculty mentor. Designed to integrate the knowledge and skills students have gained through undergraduate course work, and to prepare them for graduate research or professional level projects. Emphasizes scientific method, research design, proposal writing, development of field and analytical methods, scientific writing, and the oral, written, and graphical presentation of data and research results. **Prerequisites:** ENGL F211X or ENGL F213X; at least one writing intensive course designated (W); junior standing. Cross-listed with GEOG F483. (3+0)

### NRM F484 W Senior Thesis in Natural Resources Management 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 F483 and permission of instructor. (2+0)

### 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 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 or BIOL 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 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 F637 Evolution of Conservation Concepts and Policy 3 Credits Offered Fall Even-numbered Years

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 3 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+0)

### 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 F656      Sustainable Livelihoods and Community Well-Being**  
**3 Credits**      Offered Fall

Review the basic principles that govern the sustainability of systems and look at the cultural practices and individual behaviors that enhance or degrade sustainable livelihoods and community well-being. Emphasis is on understanding the historical context of ideas about sustainability, on understanding the nature and magnitude of the social, economic and ecological dimensions of contemporary change, and the “best practices” currently in place for communities to respond effectively to change. *Prerequisites: Graduate standing or permission of instructor.* Cross-listed with NRM F656 and GEOG F656 (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: CHEM F106X; NRM F375 or BIOL F375; 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 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 or BIOL 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 GEOG F692. (1-3+0)

**NRM F692P      Graduate Seminar**  
**1-3 Credits**

Topics in natural resources management and geography explored through readings, student presentations, group discussions and guest speakers. Graded Pass/Fail. *Prerequisites: Graduate standing or permission of instructor.* Cross-listed with GEOG F692. (1-3+0)

## 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 F201 The Circumpolar North: An Introductory Overview ❄️

3 Credits Offered Every Fall

This course will introduce students to the human experience in the circumpolar north by exploring such themes in the social sciences and humanities as: a) the differences and commonalities between indigenous and non-indigenous visions, assumptions and experiences; b) the emphasis on nature and wilderness in popular culture and nature's inherent value to human physical and spiritual well being; c) political issues such as alienation from core political-economic and population centers and tension between pro-development and pro-conservationist forces; and d) how northern literature reflects these and other aspects of human experience in the north. Course is taught online. (3+0)

### 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 F223 Alaska Native Music (h) ❄️

3 Credits

Introductory course devoted to the study of indigenous musical cultures throughout Alaska and neighboring regions. Emphasis on musical systems in terms of their respective sounds and their relationship to culture and society, cross-cultural comparisons and a focus on both past and present musical styles. Cross-listed with ANS F223; MUS F223. (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 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. Stacked with ART F625. (3+0)

### NORS F427 Polar Geography (s) ❄️

3 Credits Offered Spring Odd-numbered Years

Comparative physical, cultural, political and economic geography of the Circumpolar North and Antarctic regions. Special attention to Arctic natural resource development, climate change in both polar regions and polar geopolitics. *Prerequisites: GEOG F101 or GEOG F111X; or permission of instructor.* Stacked with GEOG F627; NORS F627. Cross-listed with GEOG F427. (3+0)

### NORS F449 Northern and Environmental Literature (h) ❄️

3 Credits

Intensive study of particular aspects of Alaska and circumpolar writing, ecocritical theory and the literature of environmental studies. *Prerequisites: ENGL F211X; or ENGL F213X; or permission of instructor.* Cross-listed with ENGL F449. (3+0)

### NORS F470 Oral Sources: Issues in Documentation (h) ❄️

3 Credits Offered Alternate 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 F470. Stacked with ANTH F670; NORS F670. (3+0)

### NORS F476 Russian Culture and Society in the 21st Century (h) 3 Credits Offered Spring Even-numbered Years

Study of contemporary Russian culture and society through selected literary texts and media representations; examination of the idea of the "Russian North" and its place in Russian culture; consideration of Russian politics and current events. Students will gain knowledge about present-day Russia and its peoples from a variety of perspectives, sources and media. *Prerequisite: ENGL F111X; ENGL F211X or ENGL F213X; COMM F131X or COMM F141X; junior standing or permission of the instructor.* *Russian Studies majors must complete RUSS F202 and Northern Studies majors must complete 2 NORS courses.* Cross-listed with RUSS F476. (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 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 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 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 Odd-numbered Years

Comparative physical, cultural, political and economic geography of the Circumpolar North and Antarctic regions. Special attention to Arctic natural resource development, climate change in both polar regions and polar geopolitics. *Prerequisites: Graduate standing; or permission of instructor.* Stacked with NORS F427; GEOG F427. Cross-listed with GEOG F627. (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 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

Offered Fall Odd-numbered Years

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. 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 of northern communities. *Prerequisites: Graduate*

## NORTHERN STUDIES (NORS) — PARALEGAL STUDIES (PLS)

*standing or permission of instructor.* Cross-listed with PS F662. Stacked with PS F462. (3+0)

**NORS F663 Imperial Russia, 1700-1917** ✨  
**3 Credits** Offered Fall Odd-numbered Years  
This course covers Russian history from the reign of Peter the Great (1682-1725) until the collapse of the Tsarist regime in February 1917. Topics will include Russia's complex relationship with Western Europe, the challenges posed by modernization, the Russian Empire as a multi-national state, and the emergence of the revolutionary movement. *Prerequisites: Graduate standing or permission of instructor.* Stacked with HIST F463. Cross-listed with HIST F663. (3+0)

**NORS F664 Soviet and Post-Soviet Russia** ✨  
**3 Credits** Offered Fall Even-numbered Years  
Russia from the 1917 Revolution to the present. This course examines the attempts to build a socialist utopia in the former Russian empire and its impact on the peoples of that region and the modern world. We will consider the political, economic, social and cultural nature of the Soviet state. Major themes include cultural transformation, industrialization, Stalinism, the Soviet Union as a multi-national empire, the Cold War, the collapse of the Soviet state, and the new Russia of Yeltsin and Putin. *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 Alternate 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 F681 Polar Exploration and its Literature** ✨  
**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: 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 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)

**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 Paralegal Studies**  
**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 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 F201 Practical Paralegal Skills**  
**3 Credits**  
 The practical 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. *Prerequisites: PLS F102 or permission of instructor.* (3+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. *Prerequisites: PLS F102 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 or permission of instructor.* (3+0)

**PLS F213 Criminal Law for Paralegals**  
**3 Credits** Offered Fall  
 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 or permission of instructor.* (3+0)

**PLS F215 Contracts/Real Property**  
**3 Credits** Offered Spring  
 Basic vocabulary and concepts essential to effectively assist an attorney with the preparation of contracts and real property transactions. *Prerequisites: PLS F102 or permission of instructor.* (3+0)

**PLS F240 Family Law**  
**3 Credits** Offered Fall  
 Basic vocabulary and concepts essential to understanding family law and assisting a practicing attorney in matters involving marriage issues, premarital contracts, annulment, divorce, dissolution, property division, child custody, support and visitation. *Prerequisites: PLS F102 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 or permission of instructor.* (3+0)

**PLS F250 Probate Law**  
**3 Credits** Offered Spring  
 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 or permission of instructor.* (3+0)

**PLS F260 Computers in the Law Office**  
**3 Credits** Offered Fall  
 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; 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 or permission of instructor.* (3+0)

**PLS F280 Legal Research and Writing for Paralegals**  
**3 Credits** Offered Fall  
 Legal research skills using law library methods, computer-assisted legal research 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. *Prerequisites: PLS F102 or permission of instructor.* (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 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.* (0+0+10)

## 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 F101 Fundamentals of Petroleum, Drilling and Production**  
**3 Credits** Offered Fall and Spring  
 Fundamental principles of origin, migration, accumulation and exploration of petroleum. Principles of drilling, drilling practices, and drilling fluids. Overview of production practices, surface production equipment. Influence of rock and fluid properties on the principles of petroleum recovery, petroleum transportation. Overview of Alaska unconventional hydrocarbon resources, opportunities and impact on the state economy. *Prerequisites: Freshman standing in Petroleum Engineering program or permission of the instructor.* (3+0)

**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 F252X; GEOS F101X or GE F261. Prerequisite or Co-requisite: ES F346.* (4+0)

## PETROLEUM ENGINEERING (PETE)

**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 F301; 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: PETE F476; 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; 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 F253X; 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)

**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 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; PETE F407 or PETE F426; PETE F476.* (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 F608**      **Flow Assurance in the Petroleum Industry**  
**3 Credits**      Offered As Demand Warrants  
Study of the thermodynamics of gas hydrates; paraffin waxes; asphaltenes; scale and chemistry of corrosion and erosion processes. Study of chemical and physical methods used for mitigation of solid phase formation. Experimental analysis and modeling of solid phase formation envelopes.

Analysis of flow regimes resulting from the presence of solid phases in oil and gas flow lines. Special fees apply. *Prerequisites: Permission of the 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 water-flooding processes in petroleum reservoirs. Special fees apply. *Prerequisites: PETE F301; PETE F476; or permission of instructor.* (3+0)

**PETE F645      Petroleum Geology**  
3 Credits      Offered Alternate Fall Even-numbered Years

Examines the origin of petroleum, the geologic controls on its distribution and accumulation and the basic tools used for exploration and exploitation, including subsurface mapping, well logging, and exploration geophysics. Special fees apply. *Prerequisites: Graduate standing or permission of the instructor.* Cross-listed with GEOS F645. (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)

**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)

## PHILOSOPHY (PHIL)

<b>PHIL F108</b> <b>3 Credits</b> 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. <i>Prerequisites: PHIL F102 or permission of instructor.</i> (3+0)	<b>Critical Thinking (h)</b> Offered As Demand Warrants	<b>PHIL F381</b> <b>3 Credits</b> An advanced explanation of problems, philosophies and approaches in logics, including classical, symbolic and comparative logics. <i>Prerequisites: PHIL F104 or its equivalent and permission of instructor.</i> (3+0)	<b>Topics in Logics (h)</b> Offered As Demand Warrants
<b>PHIL F202</b> <b>3 Credits</b> Basic assumptions, problems and systems of the major philosophical traditions of the Far East. <i>Prerequisites: PHIL F102 or permission of instructor.</i> (3+0)	<b>Introduction to Eastern Philosophy (h)</b> Offered Spring	<b>PHIL F402 W</b> <b>3 Credits</b> 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. <i>Prerequisites: ENGL F111X; 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.</i> Cross-listed with BIOL F402. (3+0)	<b>Biomedical and Research Ethics (h)</b> Offered Fall
<b>PHIL F322X</b> <b>3 Credits</b> "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 <i>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.</i> (3+0)	<b>Ethics (h)</b>	<b>PHIL F411 W,O</b> <b>3 Credits</b> Political ideas from ancient Greece, Rome, and the Judaeo-Christian tradition. Theories of Plato, Aristotle, Cicero, Augustine and Aquinas. <i>Prerequisites: COMM F131X or COMM F141X; ENGL F111X; ENGL F211X or ENGL F213X; PHIL F102; PS F101; or permission of instructor.</i> Cross-listed with PS F411. (3+0)	<b>Classical Political Theory (h)</b> Offered Fall Odd-numbered Years
<b>PHIL F341 O</b> <b>3 Credits</b> The nature of knowledge, truth and certainty. <i>Prerequisites: COMM F131X or COMM F141X; PHIL F102.</i> (3+0)	<b>Theories of Knowledge (h)</b> Offered Fall Even-numbered Years	<b>PHIL F412 W</b> <b>3 Credits</b> Political ideas from the Renaissance to the modern world. Theories of Machiavelli, Hobbes, Locke, Rousseau, Burke, Marx and Lenin. <i>Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; PHIL F102; PS F101; or permission of instructor.</i> Cross-listed with PS F412. (3+0)	<b>Modern Political Theory (s)</b> Offered Spring Even-numbered Years
<b>PHIL F342</b> <b>3 Credits</b> Theories of reality and their relationship to science, philosophy and religion. <i>Prerequisites: PHIL F102.</i> (3+0)	<b>Theories of Reality (h)</b> Offered Spring Even-numbered Years	<b>PHIL F421</b> <b>3 Credits</b> 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. <i>Prerequisites: Junior/senior standing or permission of instructor. Recommended: PHIL F102 or HUM F201X.</i> (3+0)	<b>Aesthetics (h)</b> Offered Fall Odd-numbered Years
<b>PHIL F351</b> <b>3 Credits</b> Review of the philosophy of Plato and Aristotle; minor attention to Presocratics. <i>Prerequisites: PHIL F102 or its equivalent.</i> (3+0)	<b>History of Ancient Greek Philosophy (h)</b> Offered Fall	<b>PHIL F436</b> <b>3 Credits</b> Major ethical theories. Includes virtue theory, social contract theory, deontology and utilitarianism with major arguments for and against. <i>Prerequisites: Junior standing or permission of instructor.</i> (3+0)	<b>Ethical Theory (h)</b>
<b>PHIL F352</b> <b>3 Credits</b> Review of continental rationalist and British empiricist thought, 17th-19th centuries. <i>Prerequisites: PHIL F102 or its equivalent. Recommended: PHIL F351 strongly recommended.</i> (3+0)	<b>History of Modern Philosophy: Descartes to Kant (h)</b> Offered Spring	<b>PHIL F471</b> <b>3 Credits</b> Ideological issues facing the modern world. <i>Prerequisites: PHIL F351; PHIL F352; or permission of instructor.</i> (3+0)	<b>Contemporary Philosophical Problems (h)</b> Offered Fall Even-numbered Years
<b>PHIL F353</b> <b>3 Credits</b> 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. <i>Prerequisites: Upper class standing or permission of instructor.</i> (3+0)	<b>Survey of Buddhist Thought (h)</b> Offered As Demand Warrants	<b>PHIL F472</b> <b>3 Credits</b> 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. <i>Prerequisites: PHIL F322X or equivalent or PS F321; or permission of instructor.</i> Cross-listed with PS F472. (3+0)	<b>Ethics in International Affairs (h)</b> Offered Spring Odd-numbered Years
<b>PHIL F361</b> <b>3 Credits</b> 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)	<b>Philosophy in Literature (h)</b> Offered As Demand Warrants	<b>PHIL F481</b> <b>3 Credits</b> Comparison and discussion of various contemporary methodological positions. <i>Prerequisites: Junior standing.</i> (3+0)	<b>Philosophy of Science (h)</b> Offered As Demand Warrants
<b>PHIL F363 W</b> <b>3 Credits</b> 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. <i>Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor. Recommended: PHIL F102 and upper-division status.</i> (3+0)	<b>Philosophy of Religion (h)</b> Offered As Demand Warrants	<b>PHIL F487</b> <b>3 Credits</b> 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)	<b>Conceptual Issues in Evolutionary Biology</b> Offered Spring Odd-numbered Years

**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 Sciences (n)**  
**4 Credits**              Offered Spring  
 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 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: Placement in ENGL F111X or higher; placement in DEVM F105 or higher; or permission of instructor.* (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 F252X; 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 F253X; 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 higher; MATH F252X; MATH F253X; 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 F253X; 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 F253X; 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 F351**              **Thermal Physics**  
**2 Credits**              Offered Spring  
 Classical macroscopic thermodynamics; systems and states, equations of state, the first and second laws of thermodynamics and their consequences, entropy, enthalpy, Helmholtz and Gibbs functions, equilibrium, Maxwell's relations. *Prerequisites: PHYS F212X, PHYS F220, PHYS F301, PHYS F341; or permission of instructor.* (2+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)

## PHYSICS (PHYS)

**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.* Cross-listed with ATM F413. Stacked with PHYS F613 and ATM F613. (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; PHYS F341; or permission of instructor.* (4+0)

**PHYS F451**      **Statistical Physics**  
**2 Credits**      Offered Spring  
The canonical ensemble; maximizing entropy, the partition function and Helmholtz free energy, the harmonic oscillator, Einstein and Debye solids, classical systems and the ideal gas, diatomic molecules, equipartition theorem, the photon gas and the blackbody spectrum, the grand canonical ensemble, quantum statistics, Fermion and Boson systems. *Prerequisites: PHYS F342, F351, F421; or permission of instructor.* (2+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)

**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 F471J**      **Advanced Topics in Physics I: Order of Magnitude Physics**  
**1 Credit**      Offered Fall and Spring  
By avoiding mathematical complexity, order-of-magnitude techniques increase our physical understanding and allow us to study difficult or intractable problems. Students will learn how to do so and apply these techniques to problems in fluid mechanics, biophysics, astrophysics, and/or other applications. *Prerequisites: PHYS F220; PHYS F301; or permission of the instructor. Recommended: PHYS F341; PHYS F342* (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)

<b>PHYS F472D</b>	<b>Advanced Topics in Physics II: Hamiltonian Mechanics</b>
<b>1 Credit</b>	
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. <i>Prerequisites: PHYS F220; PHYS F301; or permission of instructor.</i> (1+0)	
<b>PHYS F472E</b>	<b>Advanced Topics in Physics II: Physics of Glaciers ❄️</b>
<b>1 Credit</b>	
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. <i>Prerequisites: PHYS F220; PHYS F301; or permission of instructor.</i> (1+0)	
<b>PHYS F472F</b>	<b>Advanced Topics in Physics II: Remote Sensing</b>
<b>1 Credit</b>	
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. <i>Prerequisites: PHYS F220; PHYS F301; or permission of instructor.</i> (1+0)	
<b>PHYS F472G</b>	<b>Advanced Topics in Physics II: Solar Physics</b>
<b>1 Credit</b>	
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. <i>Prerequisites: PHYS F220; PHYS F301; or permission of instructor.</i> (1+0)	
<b>PHYS F472H</b>	<b>Advanced Topics in Physics II: Advanced Laboratory</b>
<b>1 Credit</b>	
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. <i>Prerequisites: PHYS F220; PHYS F301; or permission of instructor.</i> (1+0)	
<b>PHYS F472I</b>	<b>Advanced Topics in Physics II: Spectroscopy</b>
<b>1 Credit</b>	
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. <i>Prerequisites: PHYS F220; PHYS F301; or permission of instructor.</i> (1+0)	
<b>PHYS F472J</b>	<b>Advanced Topics in Physics II: Cosmology</b>
<b>1 Credit</b>	
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. <i>Prerequisites: PHYS F220; PHYS F301; or permission of instructor.</i> (1+0)	
<b>PHYS F472K</b>	<b>Advanced Topics in Physics II: Quantum Computation</b>
<b>1 Credit</b>	
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. <i>Prerequisites: PHYS F220; PHYS F301; or permission of instructor.</i> (1+0)	
<b>PHYS F472L</b>	<b>Advanced Topics in Physics II: Covariant Kinematics/Dynamics</b>
<b>1 Credit</b>	
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. <i>Prerequisites: PHYS F220; PHYS F301; or permission of instructor.</i> (1+0)	
<b>PHYS F472Z</b>	<b>Advanced Topics in Physics II: Current Topics in Physics</b>
<b>1 Credit</b>	Offered as Demand Warrants
The advanced topics modules provide expanded exposure to modern subjects in physics. Three topics are offered each semester, providing breadth	

beyond the core subjects of the physics undergraduate curriculum. This course will present most current material from one particular topic in physics, to be determined at the time of the offering. Students are expected to have familiarity with the core subjects in the field (classical mechanics, electromagnetism, statistical physics, quantum mechanics.) *Prerequisites: PHYS F220; PHYS F301.* (1+0) (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 F605 Physics Teaching Seminar/Practicum**  
**1 Credit** Offered Fall and Spring

This course will give science graduate students both lectures and hands-on training in dealing with all aspects of teaching, focused on but not exclusive to the Teaching Assistant level. Course topics include teaching pedagogy, preparation strategies, student management, time management and learning assessment. Graded Pass/Fail. *Prerequisites: Graduate standing in a science discipline; or permission of the instructor.* (1+0+1)

**PHYS F608 Core Skills for Computational Science**  
**3 Credits** Offered Fall

This course provides students of computational sciences, an introduction to the basic skills required to operate in the modern high performance computing (HPC) environment offered at the Arctic Regional Supercomputing Center (ARSC). Topics include an introduction to HPC, basic Unix/batch/scripting skills, performance programming, shared and distributed memory parallelism, code validation and debugging, data storage and management and data visualization. Each of these topics will be presented in lecture form. To provide additional applied knowledge, either a thorough case study by a guest speaker and/or a hands-on lab session will be given in support of each. *Graduate standing in physical sciences, experience with FORTRAN or C programming language or permission of instructor.* (3+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)

**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.* Cross-listed with ATM F613. Stacked with PHYS F413 and ATM F413. (3+0)

## PHYSICS (PHYS)

**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 F625**      **Inverse Problems and Parameter Estimation**  
**3 Credits**      Offered Spring Odd-numbered Years  
An inverse problem uses observations to infer properties of an unknown physical model. One example is how seismometer recordings can be used to infer the location of an earthquake. This course covers inverse theory and methods for solving inverse problems, including numerous examples arising in the natural sciences. Topics include linear regression, method of least squares, discrete ill-posed inverse problems, estimation of uncertainties, iterative optimization, and probabilistic (Bayesian) and sampling approaches. Assignments and computational laboratory exercises require familiarity with linear algebra and computational tools such as Matlab. *Prerequisites: MATH F253X; MATH F314; or permission of instructor.* Cross-listed with GEOS F627. (2+3)

**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 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. *Prerequisites: Graduate standing or permission of instructor.* Cross-listed with ATM F647. (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 magneto-ionic 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 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. *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. (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 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. *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)

**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)

**POLITICAL SCIENCE (PS)**

**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 Spring Odd-numbered Years  
 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: One or more of the following: HIST F110, PS F263, TM F201 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 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  
 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: any one or more of the following: PS F101; TM F112; TM F201; HIST F110 or permission of the 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 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. Stacked with NORS 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, transnational 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 governance 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 (s)**  
**3 Credits**  
 Study of public agencies or organizations through actual experience. May be repeated for credit for a maximum of 12 credits. *Prerequisites: Upper-division standing and permission of instructor.* (0+0+10)
- PS F492P Senior Seminar in Political Science**  
**1-6 Credits**  
 Provides scope and depth to the study of political science. Exploration of new literature in the field and interdisciplinary perspectives. Requirements include a major research paper. Graded Pass/Fail. *Prerequisites: ENGL F111X; ENGL F211X or F213X (or permission of instructor); junior standing.* (1-6+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 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

## POLITICAL SCIENCE (PS) — POWER GENERATION (PGEN)

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. (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 of 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)

### PS F669 Arctic Politics and Governance 3 Credits Offered Fall

This course traces current developments in Arctic politics and governance from multiple perspectives; exploring, interests, processes, and behaviors of Arctic state- and non-state actors, individually and collectively. The course surveys the formal and informal institutions that govern resource development, pollution, shipping, state-indigenous relations, and security. *Prerequisites: PS F450, PS F452 or PS F454 or equivalent; graduate standing; or permission of instructor. A background in comparative politics and/or international relations is also recommended.* (3+0)

### PS F692 Graduate Seminar 1-6 Credits Offered As Demand Warrants

Intensive study of selected topics in the discipline. (1-6+0)

### PS F692P Graduate Seminar 1-6 Credits Offered As Demand Warrants

Intensive study of selected topics in the discipline. Graded Pass/Fail. (1-6+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&IDs) 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)

**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 higher; 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, start-ups, 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: MATH F113X 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 F230* (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. (3+0)

## PSYCHOLOGY (PSY)

**PSY F201**      **Culture and Psychology (s)**  
**3 Credits**      Offered Fall and Spring

This course presents a survey of both historic and contemporary psychological research and theory on culture. Includes discussion on cross-cultural, multicultural, and cultural perspectives in psychology. Also introduces students to diversity-based clinical and community applications of psychological research. *Prerequisites: PSY F101.* (3+0)

**PSY F240**      **Psychology of Development (s)**  
**3 Credits**      Offered Fall and Spring

The psychology of human development from conception to death. Critical emphasis on theory and research within the field of developmental psychology with the role of culture as an influencing factor. *Prerequisites: PSY F101 or permission of the instructor.* (3+0)

**PSY F245**      **Child Development (s)**  
**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: ENGL F111X or permission of instructor.* Cross-listed with ED F245 (3+0)

**PSY F250**      **Introductory Statistics for Social 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. *Prerequisites: MATH F113X or MATH F151X or MATH F251X; PSY F101 or SOC F100X or SOC F201; or permission of instructor.* Cross-listed with SOC F250. (3+0)

**PSY F275**      **Introduction to Social Science Research Methods (s)**  
**3 Credits**      Offered Fall and 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 or permission of instructor.* (3+0)

**PSY F304**      **Personality (s)**  
**3 Credits**      Offered Spring Even-numbered Years

Psychological and social/cultural determinants of personality formation including appropriate theories in both areas. *Prerequisites: PSY F101 and PSY F275 or permission of instructor.* (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. Recommended: previous or current enrollment in PSY F275.* (3+0)

**PSY F330**      **Social Psychology (s)**  
**3 Credits**      Offered Spring Odd-numbered Years

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. Also offered through eLearning & Distance Education some semesters (depending on availability of instructor). *Prerequisites: PSY F101 or SOC F100X; PSY F275 or SOC F373.* Cross-listed with SOC F330. (3+0)

**PSY F333**      **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. *Prerequisites: SOC F100X; or SOC F201 or PSY F101 or WGS F201; or permission of instructor. Recommended: PSY F275 or SOC F373.* Cross-listed with SOC F333 and WGS F332. (3+0)

**PSY F335 O/2**      **Brain and Behavior**  
**3 Credits**      Offered Alternate Fall Odd-numbered Years

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. Meets one-half of core upper division oral communication intensive requirement. *Prerequisites: COMM F131X or COMM F141X; PSY F101 plus previous or concurrent enrollment in PSY F275; or permission of instructor. Recommended: BIOL F112X or BIOL F116X* (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 of 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. Also available through eLearning & Distance Education some semesters (depending on availability of instructor). *Prerequisites: PSY F101 or permission of instructor.* (3+0)

**PSY F360 O**      **Psychology of Women Across Cultures (s)**  
**3 Credits**      Offered As Demand Warrants

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 WGS F201; or permission of instructor. Recommended: PSY F275 or SOC F373.* Cross-listed with WGS F360. (3+0)

**PSY F370**      **Drugs and Behavior (s)**  
**3 Credits**      Offered as Demand Warrants

Explores the effects of licit, illicit, therapeutic, and non-therapeutic drugs on behaviors, physiology, emotions, and thought processes. Includes introduction to factors impacting these effects, such as cultural, environmental, and societal influences. Topics covered also include alcoholism, law enforcement and legal aspects of drug use and abuse, drug education alternatives, and treatment and rehabilitation of drug users. *Prerequisites: PSY F101 or permission of instructor. Recommended: PSY F275.* (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; PSY F101; PSY F250 or equivalent; PSY F275 or equivalent or permission of the instructor.* (3+0)

**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. *Prerequisites: PSY F101; PSY F275; nine credits of psychology courses with a grade of C- or higher; or permission of instructor.* (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. *Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; PSY F101; PSY F275; 9 credits of psychology courses with grade of C- or higher; or permission of instructor.* (3+0)
- PSY F448**      **Understanding FASD: Diagnosis, Intervention and Strategies**  
**3 Credits**  
 This is an overview course designed to educate candidates about Fetal Alcohol Spectrum Disorder: how they are acquired, current diagnostic strategies; intervention strategies within social services, therapeutic environments and school settings; and individual case management strategies. By the end of the course candidates should possess knowledge of working with children affected by fetal alcohol spectrum disorders, understand the psychosocial implications of this disorder, and be able to identify best possible strategies to accommodating and intervening with these individuals in a classroom setting. Cross-listed with EDSE F448. Stacked with PSY F648; EDSE F648. (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: Nine credit hours of PSY courses to include PSY F101 and PSY F345; or permission of the instructor.* (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. *Prerequisites: PSY F101; PSY F275; and junior standing.* (3+0)
- PSY F470 W,O**      **Sensation and Perception (s)**  
**3 Credits**      Offered As Demand Warrants  
 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. Meets core upper division writing and oral intensive requirements. *Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X; COMM F131X or COMM F141X; nine credit hours of PSY courses (which must include PSY F101 and PSY F275); or permission of instructor.* (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 during the prior semester before registering for this course. Graded Pass/Fail. *Prerequisites: Permission of instructor; PSY F101; Psychology major with junior or senior standing; with minimum 12 credits of psychology. Recommended: PSY F275.* (1+0)
- PSY F601**      **Clinical/Community/Cross-Cultural Integration Seminar**  
**1 Credit**      Offered As Demand Warrants  
 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. *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)

## PSYCHOLOGY (PSY)

**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 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 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 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 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 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 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)

<p><b>PSY F639</b> <b>3 Credits</b></p> <p>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. <i>Prerequisites: Admittance to Psychology Ph.D. program or permission of instructor.</i> (3+0)</p> <p><b>PSY F646</b> <b>3 Credits</b></p> <p>Topics related to the role of the school counselor such as consultation, career guidance, and culturally appropriate assessment. <i>Prerequisites: COUN F623; admittance to Counseling program or School Counseling Certification program or permission of the instructor.</i> Cross-listed with COUN F646. (3+3)</p> <p><b>PSY F647</b> <b>3 Credits</b></p> <p>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. <i>Prerequisites: Admittance to Master's program in Psychology or Counseling, or permission of instructor.</i> (3+0)</p> <p><b>PSY F648</b> <b>3 Credits</b></p> <p>This is an overview course designed to educate candidates about Fetal Alcohol Spectrum Disorder: how they are acquired, current diagnostic strategies; intervention strategies within social services, therapeutic environments and school settings; and individual case management strategies. By the end of the course candidates should possess knowledge of working with children affected by fetal alcohol spectrum disorders, understand the psychosocial implications of this disorder, and be able to identify best possible strategies to accommodating and intervening with these individuals in a classroom setting. Research project required. <i>Prerequisites: Graduate standing.</i> Cross-listed with EDSE F648. Stacked with PSY F448; EDSE F648. (3+0)</p> <p><b>PSY F650</b> <b>3 Credits</b></p> <p>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. <i>Prerequisites: PSY F345 or equivalent; admittance to Counseling program; or School Counseling Certification program; or permission of instructor.</i> Cross-listed with COUN F650. (3+0)</p> <p><b>PSY F652</b> <b>1-3 Credits</b></p> <p>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. <i>Prerequisites: PSY F611; PSY F622; PSY F623; admittance to the Psychology Ph.D. program; or permission of instructor.</i> May be repeated for a maximum of 9 credits. (1-3+0+7-20)</p>	<p><b>Research Methods</b> Offered Spring</p> <p><b>School Counseling</b> Offered Fall</p> <p><b>Professional Ethics</b> Offered Fall</p> <p><b>Understanding FASD: Diagnosis, Intervention and Strategies</b></p> <p><b>Cross-Cultural Psychopathology</b> Offered Fall</p> <p><b>Practicum Placement — Clinical I</b> Offered Fall</p>	<p><b>PSY F653</b> <b>1-3 Credits</b></p> <p>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. <i>Prerequisites: PSY F652; admittance to Psychology Ph.D. program; or permission of instructor.</i> (1-3+0)</p> <p><b>PSY F657</b> <b>3 Credits</b></p> <p>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. <i>Prerequisites: PSY F639; admittance to Psychology Ph.D. program; or permission of instructor.</i> (3+0)</p> <p><b>PSY F658</b> <b>3 Credits</b></p> <p>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. <i>Prerequisites: PSY F639; graduate standing in Psychology; or permission of instructor.</i> (3+0)</p> <p><b>PSY F659</b> <b>3 Credits</b></p> <p>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. <i>Prerequisites: PSY F639; PSY F657; admittance to Psychology Ph.D. program; or permission of instructor.</i> (3+0)</p> <p><b>PSY F660</b> <b>3 Credits</b></p> <p>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. <i>Prerequisites: Admittance to Counseling Program or School Counseling Certification program or permission of instructor.</i> Cross-listed with COUN F623. (3+2)</p> <p><b>PSY F661</b> <b>3 Credits</b></p> <p>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. <i>Prerequisites: Admittance to the Counseling program; or School Counseling Certification program; or permission of instructor.</i> Cross-listed with COUN F660. (3+0)</p> <p><b>PSY F666</b> <b>3 Credits</b></p> <p>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. <i>Prerequisites: COUN F623; admittance to the Counseling program; or School Counseling Certification program; or permission of instructor.</i> Cross-listed with COUN F666. (3+0)</p>
		<p><b>Practicum Placement — Clinical II</b> Offered Spring</p> <p><b>Quantitative Analysis</b> Offered Fall</p> <p><b>Qualitative Analysis</b> Offered Fall</p> <p><b>Multivariate Statistics</b></p> <p><b>Counseling Theories and Applications I</b> Offered As Demand Warrants</p> <p><b>Cross-Cultural Counseling</b> Offered Spring; As Demand Warrants</p> <p><b>Family and Network Therapy</b> Offered Spring</p>

## PSYCHOLOGY (PSY) — RECREATION (RECR)

**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)

**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 Summer Even-numbered Years  
Kinds and types of groups with emphasis on methods, problems and skills needed in working with groups in a counseling situation. *Prerequisites: COUN F623; Admittance to the Counseling program; or School Counseling Certification program; or permission of instructor.* Cross-listed with COUN F674. (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. Special fees apply. *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 after-care. 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 F653; admittance to Psychology Ph.D. program; or permission of instructor.* (3+0)

**PSY F686**            **Predocutorial 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 DCTs (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. Special fees apply. *Prerequisites: PSY F679; admittance to Psychology Ph.D. program or permission of instructor.* (3+0)

## 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)

<b>RECR F110B</b> <b>1 Credit</b>	<b>Intermediate Swimming</b> Offered As Demand Warrants	<b>RECR F120L</b> <b>1 Credit</b>	<b>Zumba Fitness</b> Offered As Demand Warrants
Intermediate-level swimming skills, proper breathing techniques and beginning strokes. Emphasizes personal water safety. Graded Pass/Fail. (0+3)		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. (0+3)	
<b>RECR F110C</b> <b>1 Credit</b>	<b>Advanced Swimming</b> Offered As Demand Warrants	<b>RECR F130A</b> <b>1 Credit</b>	<b>Beginning Jazz Dance</b> Offered As Demand Warrants
Advanced-level swimming skills, proper breathing techniques and beginning strokes. Emphasizes personal water safety. Graded Pass/Fail. (0+3)		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)	
<b>RECR F110D</b> <b>1 Credit</b>	<b>Conditioning Swimming</b> Offered As Demand Warrants	<b>RECR F130B</b> <b>1 Credit</b>	<b>Intermediate Jazz Dance</b> 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)		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)	
<b>RECR F110E</b> <b>1 Credit</b>	<b>Beginning Scuba</b> Offered As Demand Warrants	<b>RECR F130C</b> <b>1 Credit</b>	<b>Advanced Jazz Dance</b> Offered As Demand Warrants
Instruction and practice in beginning underwater aquatic activities. Graded Pass/Fail. (0+3)		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)	
<b>RECR F110J</b> <b>1 Credit</b>	<b>Fundamentals of Competitive Water Polo</b> Offered As Demand Warrants	<b>RECR F130D</b> <b>1 Credit</b>	<b>Modern Dance</b> 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. <i>Prerequisites: RECR F110D or instructor permission.</i> (0+3)		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)	
<b>RECR F120A</b> <b>1 Credit</b>	<b>Aerobics</b> Offered As Demand Warrants	<b>RECR F130E</b> <b>1 Credit</b>	<b>Beginning Ballroom Dance</b> 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)		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)	
<b>RECR F120C</b> <b>1 Credit</b>	<b>Beginning Yoga</b> Offered As Demand Warrants	<b>RECR F130F</b> <b>1 Credit</b>	<b>Intermediate Ballroom Dance</b> Offered As Demand Warrants
Beginning concepts and philosophy of yoga, breathing, postures, meditation, Sanskrit names of exercises, increased muscle tone and flexibility. Graded Pass/Fail. (0+3)		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)	
<b>RECR F120D</b> <b>1 Credit</b>	<b>Intermediate Yoga</b> Offered As Demand Warrants	<b>RECR F130G</b> <b>1 Credit</b>	<b>Advanced Ballroom Dance</b> 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)		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)	
<b>RECR F120F</b> <b>1 Credit</b>	<b>Exercise And Fitness</b> Offered As Demand Warrants	<b>RECR F130H</b> <b>1 Credit</b>	<b>Beginning Ballet</b> 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)		Instruction and practice in ballet at beginning levels. Graded Pass/Fail. Cross-listed with THR F130H. (0+3)	
<b>RECR F120G</b> <b>1 Credit</b>	<b>Military Fitness Training</b> Offered As Demand Warrants	<b>RECR F130J</b> <b>1 Credit</b>	<b>Intermediate Ballet</b> Offered As Demand Warrants
Instruction and practice in fitness activities concentrating on flexibility, strength, and muscular and cardiovascular endurance. Graded Pass/Fail. (0+3)		Instruction and practice in ballet at intermediate levels. Graded Pass/Fail. Cross-listed with THR F130J. (0+3)	
<b>RECR F120H</b> <b>1 Credit</b>	<b>Multi Fitness Conditioning</b> Offered As Demand Warrants		
An overview of medium to high intensity aerobic exercise and muscle strengthening, conditioning and toning. Graded Pass/Fail. (0+3)			
<b>RECR F120J</b> <b>1 Credit</b>	<b>Weight Training</b> Offered As Demand Warrants		
Design and perform strength training routines using resistance to achieve overall fitness. Graded Pass/Fail. (0+3)			
<b>RECR F120K</b> <b>1 Credit</b>	<b>Advanced Weight Training</b> Offered As Demand Warrants		
Design and perform strength training routines using resistance to achieve overall fitness. Graded Pass/Fail. (0+3)			

## RECREATION (RECR)

### 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 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. (0+3)

### RECR F130S **Beginning Contemporary Dance**

**1 Credit** Offered As Demand Warrants

Contemporary dance is an opportunity for students to explore contemporary dance movement, and gain strength and flexibility to improve their ability to dance. Designed to introduce students to contemporary dance, the course will be a combination of stretching, conditioning, and dancing. Students will be expected to demonstrate an understanding of basic contemporary dance principles and interpretation upon completion. Graded Pass/Fail. Cross-listed with THR F130S. (0+3)

### RECR F130T **Beginning Lyrical Dance**

**1 Credit** Offered As Demand Warrants

Instruction and practice in lyrical dance at the beginning level. Students will gain an understanding of body movements and choreographic styles of lyrical dance, as well as an understanding of one's physical self as a dancer. Graded Pass/Fail. Cross-listed with THR F130T. (0+3)

### RECR F130U **Hot Hula Fitness**

**1 Credit** Offered As Demand Warrants

Hula Fitness incorporates traditional Polynesian drum beats as well as Hip Hop and Reggae music while performing dance movements from the South Pacific Islands. These movements give emphasis to core training and strengthening of the larger muscle groups. This unique and exciting exercise class encourages positive well-being and physical health. Graded Pass/Fail. (0+3)

### RECR F130V **Beginning Swing Dance**

**1 Credit** Offered As Demand Warrants

Introduction to several forms of swing dance. Learn swing dance principles, techniques and steps to build a foundation for future learning and enjoyment. Dances will include Four Count (Country) Swing, East Coast Swing, West Coast Swing, and Hustle among others. Graded Pass/Fail. Cross-listed with THR F130V. (0+3)

### RECR F130Y **Beginning Tap Dance**

**1 Credit** Offered As Demand Warrants

An opportunity for students to explore tap dance and develop an understanding and practice of movement skills basic to tap dance of America. Students will learn the basic steps while focusing on rhythm and coordination. A variety of tap styles will be introduced. Graded Pass/Fail. (0+3)

### RECR F130Z **Intermediate Swing Dance**

**1 Credit** Offered As Demand Warrants

Instruction at the intermediate level of swing dance. Learn intermediate level swing dance techniques and steps, and prepare for more advanced future dance learning and enjoyment. Dances will include Four Count (Country) Swing, East Coast Swing, Single Count Swing, West Coast Swing and Hustle. Graded Pass/Fail. *Prerequisites: RECR F130V; or RECR F130E; or permission of instructor.* (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 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)

### 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. Special fees apply. (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)

<b>RECR F140L</b> <b>1 Credit</b>	<b>Technical Climbing</b> Offered As Demand Warrants	<b>RECR F150D</b> <b>1 Credit</b>	<b>Beginning Karate</b> 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)		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)	
<b>RECR F140M</b> <b>1 Credit</b>	<b>Introduction to Fly Fishing and Fly Tying</b> ✳ Offered As Demand Warrants	<b>RECR F150E</b> <b>1 Credit</b>	<b>Intermediate Karate</b> 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)		Instruction and practice in intermediate karate. Graded Pass/Fail. (0+3)	
<b>RECR F140N</b> <b>1 Credit</b>	<b>Alaskan Fly Fishing and Tying</b> ✳ Offered As Demand Warrants	<b>RECR F150F</b> <b>1 Credit</b>	<b>Advanced Karate</b> Offered As Demand Warrants
The art and science of fly casting, fishing and tying. Graded Pass/Fail. Special fees apply. (0+3)		Instruction and practice in advanced karate. Graded Pass/Fail. (0+3)	
<b>RECR F140Q</b> <b>1 Credit</b>	<b>Tennis</b> Offered As Demand Warrants	<b>RECR F150G</b> <b>1 Credit</b>	<b>Beginning Kung Fu/JiuJitsu/Tae Kwon Do</b> Offered As Demand Warrants
Instruction and practice activities in tennis. Graded Pass/Fail. (0+3)		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)	
<b>RECR F140R</b> <b>1 Credit</b>	<b>Billiards</b> Offered As Demand Warrants	<b>RECR F150H</b> <b>1 Credit</b>	<b>Intermediate Kung Fu/JiuJitsu/Tae Kwon Do</b> 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)		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)	
<b>RECR F140T</b> <b>1 Credit</b>	<b>Beginning Golf</b> Offered As Demand Warrants	<b>RECR F150J</b> <b>1 Credit</b>	<b>Advanced Kung Fu/JiuJitsu/Tae Kwon Do</b> Offered As Demand Warrants
Instruction and practice activities at beginning golf. Graded Pass/Fail. (0+3)		Instruction and practice in advanced movements, weapons and martial arts certificate promotions. Graded Pass/Fail. (0+3)	
<b>RECR F140U</b> <b>1 Credit</b>	<b>Intermediate Golf</b> Offered As Demand Warrants	<b>RECR F150K</b> <b>1 Credit</b>	<b>Beginning Tai Chi</b> Offered As Demand Warrants
Instruction and practice activities in intermediate golf. Graded Pass/Fail. (0+3)		Instruction and practice in beginning tai chi. Graded Pass/Fail. (0+3)	
<b>RECR F140V</b> <b>1 Credit</b>	<b>Bowling</b> Offered As Demand Warrants	<b>RECR F150L</b> <b>1 Credit</b>	<b>Intermediate Tai Chi</b> Offered As Demand Warrants
Instruction and practice activities in bowling. Graded Pass/Fail. (0+3)		Instruction and practice in intermediate tai chi. Graded Pass/Fail. (0+3)	
<b>RECR F140Y</b> <b>1 Credit</b>	<b>Kayaking</b> Offered As Demand Warrants	<b>RECR F150M</b> <b>1 Credit</b>	<b>Advanced Tai Chi</b> Offered As Demand Warrants
Instruction and practice activities at beginning through advanced kayaking. Graded Pass/Fail. Special fees apply. (0+3)		Instruction and practice in advanced tai chi. Graded Pass/Fail. (0+3)	
<b>RECR F140Z</b> <b>1 Credit</b>	<b>Canoeing</b> Offered As Demand Warrants	<b>RECR F150Q</b> <b>1 Credit</b>	<b>Intermediate Tennis</b> Offered As Demand Warrants
Instruction and practice activities at beginning through advanced canoeing. Graded Pass/Fail. (0+3)		Instruction and practice in tennis at the intermediate level, building improved consistency and increasing confidence with strokes. Graded Pass/Fail. <i>Prerequisites: RECR F140Q or instructor permission.</i> (0+3)	
<b>RECR F150A</b> <b>1 Credit</b>	<b>Beginning Aikido</b> Offered As Demand Warrants	<b>RECR F160B</b> <b>1 Credit</b>	<b>Varsity Athletics</b> 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)		Instruction and practice in varsity athletics. Graded Pass/Fail. (0+3)	
<b>RECR F150B</b> <b>1 Credit</b>	<b>Intermediate Aikido</b> Offered As Demand Warrants	<b>RECR F160C</b> <b>1 Credit</b>	<b>Ultimate Frisbee</b> 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)		Ultimate Frisbee, including catching and throwing the disc as well as both offensive and defensive strategies. Graded Pass/Fail. (0+3)	
<b>RECR F150C</b> <b>1 Credit</b>	<b>Advanced Aikido</b> Offered As Demand Warrants	<b>RECR F160D</b> <b>1 Credit</b>	<b>Volleyball</b> 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)		Skills of volleyball, game rules, plays and terminology. Graded Pass/Fail. (0+3)	

## RECREATION (RECR) — RELIGION (RELG)

**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 F160F**      **Introduction to Mountaineering** ✨  
**2 Credits**            Offered As Demand Warrants  
This course is designed to introduce the student to the sport of mountaineering. Graded Pass/Fail. Special fees apply. (0+6)

**RECR F160M**      **Advanced Fly Fishing and Fly Tying**  
**1 Credit**            Offered As Demand Warrants  
Building on RECR F140M, students will learn how to more accurately use a fly rod, tie big-game fishing knots, construct furred leaders, and plan fly fishing trips, as well as how build and create fishing flies using advanced techniques. Information on Alaskan freshwater fish, habitat, entomology, and stream ecology will be covered as applicable. Graded Pass/Fail. Special fees apply. *Prerequisites:* RECR F140M or RECR F140N or permission of instructor. (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 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 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. Special fees apply. *Prerequisites: Instructor permission required.* (1+0)

**RECR F170P**      **Introduction to Arctic Backpacking**  
**1 Credit**            Offered As Demand Warrants  
Designed to introduce students to the art of backpacking the Arctic: route planning, food preparation, gear choices, and emergency preparedness leading to a week-long Arctic backpacking trip. Many of the Leave No Trace camping ethics that are important while backpacking in the Arctic will be addressed. Graded Pass/Fail. Special fees apply. (0+0+3)

**RECR F170Q**      **Introduction to Dog Mushing**  
**1 Credit**            Offered As Demand Warrants  
This course is designed for students who have little to no experience in dog mushing and are interested in learning the basics of dog sledding in Alaska. Topics to be covered include: Techniques for operating a sled dog kennel; Introduction to sled dog management and maintenance; Hands-on instruction on how to hook up and drive a team of 3 to 4 sled dogs; and offers an extended mushing experience. Graded Pass/Fail. *Must be enrolled with the Black Spruce Dog Sledding.* (0+3)

**RECR F180A**      **Expedition Rock Climbing**  
**1 Credit**            Offered As Demand Warrants  
This course is designed to take students who already have a grasp of the basics of rock climbing to the next level. Students will travel to a designated location in order to develop the ability to sport lead outside, and gain working knowledge of the fundamental concepts of placing removable rock protection (trad gear) and doing practice leads while placing trad gear in the rock. Students will also learn crack climbing movement techniques such as hand jams and foot jams. Graded Pass/Fail. Special fees apply. *Prerequisites:* RECR F140H or RECR F140J or equivalent. (0+3)

**RECR F180B**      **Introduction to Expedition Kayaking**  
**1 Credit**            Offered As Demand Warrants  
Designed to introduce students to the art of expedition tripping with inflatable kayaks with a float on primarily Class I and II water. The students will be involved with all aspects of planning and executing this awesome wilderness trip. Food and transportation is included in the field fee. Graded Pass/Fail. Special fees apply. (0+3)

## 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 F112**      **Dealing with Demons and Death: Magic in Ancient Cultures (h)**  
**1 Credit**            Offered as Demand Warrants  
An exploration into ancient traditions of magic as evidence by Mesopotamian, Egyptian, Biblical and Graeco-Roman texts and artifacts, focusing upon their rationales, methods, efficacy and legitimacy with respect to variously preventing, mitigating or invoking harmful and destructive forces. (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 F114      The Bible in the Quran (h)**  
1 Credit      Offered As Demand Warrants

An inquiry into the origins and motivations by which Islam appropriated and reconfigured biblical traditions in order to meet its own theological, political, economic, and social needs/interests. What did Muhammad and the earliest Muslims know about the Ahl al-Kitab (\*People of the Book\*)? From where and whom did they acquire their knowledge? This course also considers the ramifications (historical and contemporary) of scriptural traditions between Islam, Christianity, and Judaism. (1+0)

**RELG F115      End of Days — Apocalypse Across the Ages (h)**  
1 Credit      Offered As Demand Warrants

A study into the origins and interpretive history of Abrahamic religious traditions dealing with the end-time. What were the ancient sociocultural circumstances out of which Jewish, Christian, and Muslim apocalypticism developed? In what manners do nonscriptural end-time narratives and images compare/contrast with those found in the Bible and the Quran? How and why have Biblical and Quranic apocalyptic traditions been (mis)appropriated during later eras, including our own? (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 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)

**RELG F231      Prophecy, Shamanism and Scripture (h)**  
3 Credits      Offered As Demand Warrants

An introductory exploration into the phenomena of prophecy and shamanism as they are conceived and manifested within the textual and cultural traditions of Judaism and Christianity. Comparative evidence is considered from ancient Near Eastern and Mediterranean sources, and modern insights from cultural anthropology and cognitive psychology are brought to bear upon the Biblical materials, in efforts to situate their prophetic and/or shamanistic features within social scientific models of culture and mind. (3+0)

## RURAL DEVELOPMENT

**RD F100      The University Experience ☼**  
3 Credits

Designed to serve as an academic, cultural, and social transition to the UAF campus. Through learner-centered education and emphasis on positive self-concept theories, RD F100 will provide an opportunity to build on personal strengths and skills, as well as learning to take advantage of those resources and support programs which will serve rural and Alaska Native students and aid in a successful transition to college life. (3+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+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 and Marine Wildlife Development in Rural Alaska (s)☼**

3 Credits      Offered Fall Uneven Numbered Years  
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 and how management in marine waters affects inland fisheries. *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)

**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)

## RURAL DEVELOPMENT (RD)

**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. Intended to provide students with on-the-job experience to enhance skills acquired via course work. Approved internship position required and student must discuss internship position with their advisor at least one full semester in advance of when they intend to take the course. 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 F470**      **The Alaska Native Claims Settlement Act: Pre-1971 to present**  
**3 Credits**      Offered Fall  
Overview and analysis of the Alaska Native Claims Settlement Act. An in-depth examination of the land claims movement of the 1960s and resulting legislative process. Firsthand accounts from Native leaders will be featured. Case studies describing challenges of individual Native villages and regions. Contemporary issues facing ANCSA corporations will be examined. *Prerequisites: Junior standing or permission of instructor.* Stacked with RD F670 (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 Seminar** ✨  
**1-3 Credits**  
Various topics of current interest and importance to the rural development majors. Topics announced prior to each offering. Topics may include: indigenous peoples leadership, legislative process, cultural documentation, National Park Service policies, climate change, and/or co-management of natural resources. Students may take up to three Rural Development seminars on different topics for credit with prior approval. 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 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 F670 The Alaska Native Claims Settlement Act: Pre-1971 to present**  
3 Credits Offered Fall

Overview and analysis of the Alaska Native Claims Settlement Act. An in-depth examination of the land claims movement of the 1960s and resulting legislative process. Firsthand accounts from Native leaders will be featured. Case studies describing challenges of individual Native villages and regions. Contemporary issues facing ANCSA corporations will be examined. *Prerequisite: Graduate standing or permission of instructor.* Stacked with RD F470. (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

## RURAL HUMAN SERVICES (RHS) — RUSSIAN (RUSS)

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)

### 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

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 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 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)

## 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. Note: Does not satisfy core curriculum or foreign language major requirements. Graded Pass/Fail. *Prerequisites: RUSS F101 and RUSS F102 or above or permission of instructor.* (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 or equivalent.* (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)

**RUSS F476**      **Russian Culture and Society in the 21st Century (h)**  
**3 Credits**      Offered Spring Even-numbered Years  
 Study of contemporary Russian culture and society through selected literary texts and media representations; examination of the idea of the “Russian North” and its place in Russian culture; consideration of Russian politics and current events. Students will gain knowledge about present-day Russia and its peoples from a variety of perspectives, sources and media. *Prerequisite: ENGL F111X; ENGL F211X or ENGL F213X; COMM F131X or COMM F141X; junior standing or permission of the instructor. Russian Studies majors must complete RUSS F202 and Northern Studies majors must complete 2 NORS courses.* Cross-listed with NORS F476. (3+0)

**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, and present topics in film theory. Readings and topics discussed reflect issues of current interest. *Prerequisites: Junior standing, or permission of instructor.* Cross-listed with FLM F484. (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 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 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)

## SCIENCE TEACHING AND OUTREACH

**STO F601**      **Communicating Science**  
**2 Credits**      Offered Spring  
 This highly interactive course allows students to gain hands-on experience with teaching and communicating science to public audiences. Over the course of the semester, students will lead programs in K-12 school settings, develop a presentation and present their own science to peers. Students will also explore pedagogical theory, and learn how to use active and inquiry-based teaching strategies. *Prerequisites: Graduate standing or instructor permission.* (2+0)

## SCIENCE TEACHING AND OUTREACH (STO) — SOCIAL WORK (SWK)

### STO F602      Mentoring in the Sciences 2 Credits      Offered Fall

This course provides a forum for graduate students to develop their mentoring philosophy and build effective mentoring skills. Effective mentoring can be learned, but not taught. Good mentors are normally produced through years of practice, successes and failures, and no two mentoring situations are alike. This course seeks to provide a discussion and learning environment for accelerating the process of learning to be a mentor. Through discussion of case studies, activities and readings provided in course materials, students will consider mentoring philosophy, articulate it, anticipate challenges and effective solutions to a variety of mentoring issues. Graded Pass/Fail.

*Prerequisites: Graduate Standing.* (2+0)

### STO F603      Instructional Design 1 Credit      Offered Spring

This graduate seminar course will address important components of course planning and instructional design that reflect best practices in science teaching. This course focuses on the overall design of courses, the integration of the various components of a course, the development and implementation of summative assessments and syllabus construction. The course format will consist of reading and discussion, seminars and workshops. *Prerequisites: Graduate standing.* (1+0)

### STO F604      Science Teaching and Outreach Internship 4 Credits

Under the supervision of a faculty member, students gain professional experience in science teaching or outreach by choosing one of the following strands: 1) higher education, 2) formal K-12 education, or 3) informal education. An internship plan is developed prior to enrollment and agreed upon by the instructor of record, faculty mentor or K-12 teacher mentor, and student. Graded Pass/Fail. *Prerequisites: STO F666 for higher education strand or STO F601 for formal K-12 education or informal education strand or permission of instructor.* (0+0+12)

### STO F666      Scientific Teaching 2 Credits      Offered Spring Even-numbered Years

This course explores methods for teaching science at the university level. Emphasis is placed on methods of course design, instructional techniques, assessment and course management that have been shown by research to improve student learning. This course is intended for graduate students in the sciences who have an interest in improving their teaching skills. The course format will be a mixture of discussion, workshops and seminars. If the course is over-enrolled, priority will be given to teaching assistants who are assigned to teach large, introductory level (100 or 200 level) courses during the semester they are taking this course. *Prerequisites: Graduate standing or permission of the instructor.* Cross-listed with BIOL F666, CHEM F666, GEOS F666 (2+0)

### STO F692      Current Topics in Scientific Teaching 1 Credit      Offered Alternate Fall

This graduate seminar course explores current trends in science education at the pre-college and college levels. Topics may include diversity, technology, active learning, and others. The course will rely on readings from primary literature and discussion. *Recommended: STO F666 or STO F601.* *Prerequisites: Graduate standing.* (1+0)

### STO F692P      Current Topics in Scientific Teaching 1 Credit      Offered Alternate Fall

This graduate seminar course explores current trends in science education at the pre-college and college levels. Topics may include diversity, technology, active learning, and others. The course will rely on readings from primary literature and discussion. Graded Pass/Fail. *Recommended: STO F666 or STO F601.* *Prerequisites: Graduate standing.* (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 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. 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: Sophomore standing 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 F111X; ENGL F211X or ENGL F213X; 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. *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)

**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. *Prerequisites: SOC F100X or permission of instructor.* (3+0)

**SOC F250 Introductory Statistics for Social 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. *Prerequisites: MATH F151X or MATH F113X or MATH F251X;*

## SOCIOLOGY (SOC)

*PSY F101 or SOC F100X or SOC F201; or permission of instructor.* 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 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. *Prerequisites: SOC F100X; junior standing or permission of instructor.* (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; or permission of instructor.* Cross-listed with WGS F320. (3+0)

### SOC F330 Social Psychology (s) 3 Credits Offered Spring Odd-numbered Years

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. Also offered through Also offered through eLearning & Distance Education some semesters (depending on availability of instructor). *Prerequisites: PSY F101 or SOC F100X; SOC F373 or PSY F245.* Cross-listed with PSY F330. (3+0)

### SOC F333 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. *Prerequisites: SOC F100X or SOC F201 or PSY F101 or WGS F201 or permission of instructor. Recommended: PSY F275 or SOC F373.* 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 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 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

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

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)

**SPANISH**

**SPAN F100A Elementary Spanish 1A (h)**  
3 Credits

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

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

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

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 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 F101 or equivalent; 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 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 Spanish Conversation and Comprehension (h)**  
3 Credits  
Offered Fall  
Focus on increasing speaking and listening comprehension. Discussions, presentations and exercises to enhance verbal competence. Conducted in Spanish. *Prerequisites: COMM F131X or COMM F141X; SPAN F202 or equivalent; or instructor permission.* (3+0)

**SPAN F302 W Advanced Spanish Reading and 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. *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. *Prerequisites: SPAN F202 or equivalent or permission of instructor.* (3+0)

**SPAN F321 Cultures of Latin America**  
3 Credits  
Offered Spring Odd-numbered Years  
Designed to provide students with background in the cultures, history and politics of Latin America, as well as continued practice in the target language. Conducted in Spanish. *Prerequisites: SPAN F202 or equivalent; or permission of instructor.* (3+0)

## SPANISH (SPAN) — STATISTICS (STAT)

**SPAN F322**      **Cultures of Spain (h)**  
**3 Credits**      Offered Spring Even-numbered Years  
Designed to provide students with background in the culture, history and politics of Spain, as well as continued practice in the target language. Explores the changes and challenges facing contemporary Spanish society. Conducted in Spanish. *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)

**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 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 F251X; MATH F252X; MATH F253X 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. Log-linear models. Repeated categorical responses. Survival data. *Prerequisites: STAT F401; or permission of instructor.* (3+0)

## 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. *Prerequisites: MATH F151X; or MATH F122X; 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 years sequence course in statistics. *Prerequisites: MATH F222X or MATH F232X or MATH F251X or placement.* (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 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 F252X; 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 or 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 F253X; MATH F314; previous statistics course; or permission of instructor. (3+0)

**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 F251X; MATH F252X; MATH F253X; 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)

## THEATRE (THR)

### 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)

### 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. (0+3)

### THR F130S Beginning Contemporary Dance

#### 1 Credit

Offered As Demand Warrants

Contemporary dance is an opportunity for students to explore contemporary dance movement, and gain strength and flexibility to improve their ability to dance. Designed to introduce students to contemporary dance, the course will be a combination of stretching, conditioning, and dancing. Students will be expected to demonstrate an understanding of basic contemporary dance principles and interpretation upon completion. Graded Pass/Fail. Cross-listed with RECR F130S. (0+3)

### THR F130T Beginning Lyrical Dance

#### 1 Credit

Offered As Demand Warrants

Instruction and practice in lyrical dance at the beginning level. Students will gain an understanding of body movements and choreographic styles of lyrical dance, as well as an understanding of one's physical self as a dancer. Graded Pass/Fail. Cross-listed with RECR F130T. (0+3)

### THR F130V Beginning Swing Dance

#### 1 Credit

Offered As Demand Warrants

Introduction to several forms of swing dance. Learn swing dance principles, techniques and steps to build a foundation for future learning and enjoyment. Dances will include Four Count (Country) Swing, East Coast Swing, West Coast Swing, and Hustle among others. Graded Pass/Fail. Cross-listed with RECR F130V. (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 F111X or concurrent enrollment; or permission of instructor.* (3+0)

### 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 or permission of instructor.* (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)

<b>THR F245</b> <b>3 Credits</b>	<b>Stage Management (h)</b>	<b>THR F321</b> <b>3 Credits</b>	<b>Acting III (h)</b> Offered Alternate Years
This course will expose students to the multi-faceted job of the stage manager in theatrical productions with an emphasis on his/her role in the collaborative process. Students will learn to perform the duties, responsibilities and procedures of stage managers from pre- to post- production, as well as industry-standard vocabulary, proficiently. Students are expected to participate in, and will be evaluated on, classroom discussions and activities. (3+0)		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. <i>Prerequisites: THR F221 and THR F320.</i> (3+0)	
<b>THR F254</b> <b>3 Credits</b>	<b>Costume Construction (h)</b> Offered Fall	<b>THR F331</b> <b>3 Credits</b>	<b>Directing Film / Video (h)</b> Offered Fall Odd-numbered Years
Introduction to basic methods of construction used by professional shops and costume houses to create theatrical costumes. Students will complete several projects, covering hand and machine sewing, cutting, fabric identification, simple alterations and costume crafts. Class also includes lectures on shop organization, jobs and policies. Special fees apply. (2+3)		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. <i>Prerequisites: FLM/THR F271; FLM/THR F273; FLM/JRN F290 or permission of instructor. Recommended: FLM/ENGL F217; THR F121; THR F215.</i> Cross-listed with FLM F331. (1+4)	
<b>THR F271</b> <b>3 Credits</b>	<b>Let's Make a Movie!</b> Offered Fall	<b>THR F332</b> <b>3 Credits</b>	<b>Stage Directing I (h)</b>
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. <i>Recommended: THR F121; THR F241.</i> Cross-listed with FLM F271. (3+0)		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. Special fees apply. <i>Prerequisites: THR F121; THR F215.</i> (3+0)	
<b>THR F280</b> <b>2 Credits</b>	<b>Modern Dance (h)</b>	<b>THR F334 W</b> <b>3 Credits</b>	<b>Movies and Films: Watching and Analyzing (h)</b>
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)		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. <i>Prerequisites: ENGL F111X; ENGL F211X or ENGL F213X or permission of instructor.</i> Cross-listed with FLM F334. (3+0)	
<b>THR F290</b> <b>0 Credits</b>	<b>Audition or Portfolio Review Participation II</b>	<b>THR F341</b> <b>3 Credits</b>	<b>Intermediate Stagecraft (h)</b>
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)		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. <i>Prerequisites: THR F241; or permission of instructor.</i> (2+2)	
<b>THR F291</b> <b>0 Credits</b>	<b>Audition or Portfolio Review Participation II</b>	<b>THR F343</b> <b>3 Credits</b>	<b>Scene Design (h)</b>
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)		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. <i>Prerequisites: THR F241 or permission of instructor.</i> (3+0)	
<b>THR F301</b> <b>1-3 Credits</b>	<b>Theatre Practicum (h)</b>	<b>THR F347 O</b> <b>3 Credits</b>	<b>Lighting Design (h)</b>
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)		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. <i>Prerequisites: COMM F131X or COMM F141X. Recommended: THR F241.</i> Cross-listed with ART F347. (3+0)	
<b>THR F310</b> <b>3 Credits</b>	<b>Acting for the Camera (h)</b>	<b>THR F348</b> <b>3 Credits</b>	<b>Sound Design for the Entertainment Industry (h)</b> Offered Spring Odd-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. <i>Prerequisites: THR F121. Recommended prerequisite: THR F221.</i> Cross-listed with FLM F310. (3+0)		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. <i>Recommended: THR F241.</i> (2+2)	
<b>THR F320</b> <b>3 Credits</b>	<b>Voice and Speech for the Actor</b> Offered Alternate Years	<b>THR F351</b> <b>3 Credits</b>	<b>Makeup for Theatre (h)</b> Offered Spring
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. <i>Prerequisites: THR F121; THR F221; or permission of instructor.</i> (3+0)		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. Special fees apply. (1+4)	

## THEATRE (THR)

### THR F354 Intermediate Costume Construction (h) 3 Credits

This course is intended to improve students' sewing and patterning skills through a series of exercises and advanced projects. Students will be asked to construct costumes and mockups, create and alter basic patterns, manipulate sloper patterns and alter existing costumes. The final project will be designed and constructed by the student. Special fees apply. **Prerequisites:** *THR F254 or demonstrated sewing experience and instructor permission. Recommended: Theatre Practicum or Work Study in the Costume Shop.* (2+3)

### 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)

### THR F411 W Theatre History (h) 3 Credits

Students will explore the ways in which theatre developed through history by studying performance, practice and literature from Ancient Greece to the present. Course focuses on the setting and manner in which plays were produced, historical context, and popular themes. **Prerequisites:** *ENGL F111X; ENGL F211X or ENGL F213X; junior standing; or permission of instructor.* (3+0)

### THR F413 W Analyzing Global Performance (h) 3 Credits

Investigation of the structure of screenplays, playscripts and various performance modes from around the world designed to develop skills in analysis and interpretation for performance in theater and film. **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 Alternate 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 F221 THR F320 and THR F321; or permission of instructor.* (3+0)

### THR F430 The Collaborative Process (h) 3 Credits

Offered Alternate Years  
Interactive role-based course providing practice and theory in the process of theatrical collaboration. Hierarchical and consensus-based models for artistic collaboration will be introduced, discussed and practiced in light of artistic concept, resource allocation, production budgets and individual personalities and temperaments inherent in the field of theatrical production. This course serves as a capstone alternative to THR F499 for theatre majors in the performance and design/tech concentrations. **Prerequisites:** *THR F332; junior or senior standing.* (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. Special fees apply. **Prerequisites:** *THR F332 and at least one of the following: THR F321, THR F343, THR F347, THR F351 or THR F356.* (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. **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 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 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)

## TRADES AND TECHNOLOGY (TTCH) — TRIBAL MANAGEMENT (TM)

<b>TTCH F147</b> <b>1 Credit</b>	<b>Burner Maintenance and Repair</b>
Instruction in troubleshooting 10 common problems, reading manuals, changing parts, setting electrodes, changing nozzles, understanding controls and ordering replacement parts. (1+2)	
<b>TTCH F148</b> <b>2 Credits</b>	<b>Heating Systems for Building Maintenance and Repair</b>
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. <i>Recommended: TTCH F138.</i> (1+1.5)	
<b>TTCH F150</b> <b>2 Credits</b>	<b>Introduction to Painting for Building Maintenance and Repair</b>
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)	
<b>TTCH F151</b> <b>1 Credit</b>	<b>Hazardous Paint Certification</b>
Potential health hazards and information on safety practices will be addressed. (1+0)	
<b>TTCH F214</b> <b>3 Credits</b>	<b>Heating Systems Design</b>
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)	
<b>TTCH F225</b> <b>3 Credits</b>	<b>Advanced Carpentry for Building Maintenance and Repair</b>
Offered As Demand Warrants Expand carpentry skills in measuring, plan reading, site layout skills and working with elevations. <i>Prerequisites: TTCH F125 or permission of instructor.</i> (2+2)	
<b>TTCH F250</b> <b>2 Credits</b>	<b>Advanced Painting for Building Maintenance and Repair</b>
Proper methods for finishing, patching and spray painting drywall. Skills studied in the classroom will be developed in various projects. <i>Prerequisites: TTCH F150 or permission of instructor.</i> (1+2)	
<b>TTCH F282</b> <b>4 Credits</b>	<b>Selected Topics in Process Unit Design</b>
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. <i>Prerequisites: PRT F101; PRT F110; or permission of instructor. Recommended: PRT F130; PRT F140.</i> (2+4)	
<b>TTCH F300</b> <b>1-3 Credits</b>	<b>Internship in Technology</b>
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. <i>Prerequisites: Upper-division standing and permission of instructor.</i> (0+12)	

<b>TTCH F301</b> <b>3 Credits</b>	<b>Technology and Society</b>
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. <i>Prerequisites: Upper-division standing or permission of instructor.</i> (3+0)	
<b>TTCH F485</b> <b>1-6 Credits</b>	<b>Advanced Technical Experiences: Discipline Area</b>
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. <i>Prerequisites: Upper-division standing and permission of instructor.</i> (1-6+0)	

## TRIBAL MANAGEMENT

<b>TM F101</b> <b>3 Credits</b>	<b>Introduction to Tribal Government</b> ✳
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. <i>Prerequisites: Must be familiar with computer and related word processing and spreadsheet programs.</i> (3+0)	
<b>TM F105</b> <b>3 Credits</b>	<b>Introduction to Tribal Finance Applications</b> ✳
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. <i>Prerequisites: Must be familiar with computer and related word processing and spreadsheet programs.</i> (3+0)	
<b>TM F110</b> <b>1 Credit</b>	<b>Tribal Court Development for Alaska Tribes</b> ✳
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)	
<b>TM F111</b> <b>1 Credit</b>	<b>Children's Topics in Tribal Justice</b> ✳ 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. <i>Recommended: TM F110.</i> (1+0)	
<b>TM F112</b> <b>1 Credit</b>	<b>Federal Indian Law for Alaska Tribes</b> ✳ 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. <i>Recommended: TM F110.</i> (1+0)	
<b>TM F113</b> <b>1 Credit</b>	<b>Tribal Code Development</b> ✳ 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. <i>Recommended: TM F110.</i> (1+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.* (1+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.* (1+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.* (1+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, including writing effective orders and monitoring of offenders, will be discussed. Graded Pass/Fail. *Recommended: TM F110.* (1+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.* (1+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 F140 Introduction to Geospatial Data**  
**1 Credit** Offered As Demand Warrants  
 An introductory survey of tools for the gathering and mapping of both qualitative and quantitative geospatial data for the natural and social sciences. Students will get direct experience with basic tools and techniques for gathering geospatial data, and will incorporate their data into an existing geospatial database. *Prerequisites: Basic computer literacy equivalent to CIOS F100 or permission of instructor.* (1+0)

**TM F141 Practical GIS for Rural Alaska**  
**2 Credits**  
 A practical and place-based introduction to the development of maps using Geographic Information System (GIS) software. Covers the basic tools and skills necessary for creating community maps using existing geospatial data as well as data gathered using Global Positioning System (GPS) technology. Class exercises emphasize map development for applications pertinent to rural Alaska. *Prerequisites: TM F140 or permission of the instructor.* (2+0)

**TM F142 Practical GIS Project Design**  
**2 Credits**  
 How to design and implement basic Geographic Information System (GIS) projects. Class exercises emphasize GIS project planning, data collection, and practical map development to meet common needs for communities in rural Alaska. *Prerequisites: TM F141 or permission of the instructor.* (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+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 Graded Pass/Fail. *Recommended: TM F171.* (1+0)

**TRIBAL MANAGEMENT (TM) — UNDERGRADUATE RESEARCH AND SCHOLARLY ACTIVITY (URSA)**

**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.* (0.5+1)

**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.* (0.5+1)

**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)

**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.* (1+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. Graded Pass/Fail. *Prerequisites: TM F272.* (1+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)

**UNDERGRADUATE RESEARCH AND SCHOLARLY ACTIVITY**

**URSA F192 Introduction to UAF Research and Creative Scholarship**  
**1 Credit** Offered Fall and Spring  
 This course provides an overview of the diversity of research at UAF and the opportunities for undergraduate student participation in research and creative scholarship. Students will gain a broad understanding of the significance, process and impact of research as a creative scholarship as conducted across the wide range of disciplines represented on all the UAF campuses. Graded Pass/Fail. (1+0)

**URSA F388 Undergraduate Research and Creative Scholarship I**  
**2-6 Credits** Offered Fall and Spring  
 Provides undergraduate opportunities for student research or creative scholarship in advanced topics beyond typical undergraduate laboratory or studio course offerings across all disciplines. Students must meet with the course instructor in the previous semester to identify a mentor. Students will write a project proposal for further work by the end of the semester and make a poster presentation of their proposal and any preliminary findings.  
*Prerequisites: Junior standing or permission of instructor.* (0-1+4-10)

**URSA F488 Undergraduate Research and Creative Scholarship II**  
**2-6 Credits** Offered Fall and Spring  
 Provides undergraduate opportunities for student research or creative scholarship in advanced topics beyond typical undergraduate laboratory or studio course offerings. Students must meet with the instructor in the previous semester to identify their mentor and expected project; ideally students will have completed URSA F388 with the same mentor and have a written project proposal. Students will work on a project in collaboration with their mentor. Students are required to publicly present their work and submit a final report suitable for submission to a discipline-specific journal. Research and creative scholarship areas range across all disciplines. A substantial level of background in the specific discipline, a level commensurate with having achieved junior or senior level, is assumed. *Prerequisites: URSA F388 and junior senior standing or permission of the instructor.* (0-1+4-10)

**URSA F492 Undergraduate Research and Creative Scholarship Seminar**  
**1 Credit** Offered Fall and Spring  
 Course provides students a venue for presenting their research and learning about peer research at UAF. Students will have the opportunity to gain and develop oral presentation skills and will gain a broad understanding of the significance, process and impact of research as conducted across the wide range of scholarly disciplines at UAF campuses. Graded Pass/Fail. (1+0)

## VETERINARY MEDICINE

**DVM F603 Veterinary Science Research and Methods**  
**1 Credit** Offered Fall  
 This course will illustrate the role of research in furthering the practice of veterinary medicine by presenting a series of lectures from clinical and basic science investigators, faculty and staff who will describe important elements of the research process. The course will also describe possible career opportunities to students in animal health research. Graded Pass/Fail. Special fees apply. *Prerequisites: Admittance to the professional veterinary program.* (1+0)

**DVM F606 Immunology**  
**3 Credits** Offered Fall  
 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). Special fees apply. *Prerequisites: Admittance to the professional veterinary program.* Stacked with BIOL F456. (3+0)

**DVM F610 Foundations of Veterinary Medicine**  
**1 Credit** Offered Fall  
 The first semester of a four-course series in foundations of veterinary medicine. The full course series will encompass topics in ethics, communication, physical exam skills, surgical skills, clinical reasoning and professional development. This course will help you develop the professional skills necessary for the successful practice of veterinary medicine. Special fees apply. *Prerequisites: Admittance to the professional veterinary program.* (1+0)

**DVM F611 Foundations of Veterinary Medicine II**  
**1 Credit** Offered Spring  
 The second semester of a four-course series in foundations of veterinary medicine. The full course series will encompass topics in ethics, communication, physical exam skills, surgical skills, clinical reasoning and professional development. This course will help you develop the professional skills necessary for the successful practice of veterinary medicine. Special fees apply. *Prerequisites: DVM F610.* (5+5)

**DVM F616 Functional Anatomy**  
**8 Credits** Offered Fall  
 The course will include an introduction to veterinary anatomy: basic veterinary anatomy, orientation, nomenclature, locomotion apparatus, circulatory system, digestive, respiratory apparatus, lymphatic organs and nervous system of domestic animals. A general explanation of the basic anatomical preparation techniques will be presented to improve the manual skills of the students. The course will place the anatomical knowledge in a clinical context. Special fees apply. *Prerequisites: Admittance to the professional veterinary program.* Stacked with MSL F618. (5+6)

**DVM F618 Veterinary Physiology and Histology**  
**7 Credits** Offered Fall  
 The course will discuss the histology and physiology of domestic animal organ systems, tissues, cartilage, bone, muscle, arthrology, nervous system, hematopoiesis, lymphatic, cardiovascular, respiratory and digestive systems; the renal system and physiology. The course will help to place the knowledge in histology and physiology in a clinical context. Special fees apply. *Prerequisites: Admittance to the professional veterinary program.* (6+3)

**DVM F619 Veterinary Neurobiology**  
**4 Credits** Offered Spring  
 Students will learn information on neurologic conditions in domesticated animals. A problem-oriented approach makes it easy to diagnose and treat neurologic problems in domesticated animals. The coverage of disorders by problem, not by established disease diagnosis, emulates how animals present to the veterinary hospital and simplifies the formulation of a correct diagnosis. Special fees apply. *Prerequisites: Successful completion of first semester veterinary courses.* (3+3)

**DVM F623 Veterinary Nutrition and Metabolism**  
**2 Credits**  
 This course will examine the nutritional needs of major species of veterinary importance. Discussion will revolve around specific nutritional needs as they relate to life-stages and production status of monogastric and ruminant animals. Course topics deal with the classification and function of nutrients, digestive processes (monogastric, ruminant, hind-gut fermenters), evaluation of feedstuffs and feed labels, and principles of disease related to nutritional deficiency as well as nutritional excess. Special fees apply. *Prerequisites: Successful completion of first semester veterinary courses.* Cross-listed with MSL F613. (2+0)

**DVM F625 Principles of Diagnostic Imaging**  
**2 Credits** Offered Fall  
 This course will include an introduction to radiographic anatomy of small and large animals; introduction to x-ray, MRI and CT. The course will help to place the anatomical knowledge into clinical context. Special fees apply. *Prerequisites: Admittance to the professional veterinary program.* (2+0)

**DVM F637 Veterinary Bacteriology and Mycology**  
**3 Credits**  
 This course will discuss bacterial structure, differences between bacterial families, and fungi and their pathogenesis. The basic principles of bacterial and fungal pathogenesis will be presented. Host response to bacterial or fungal infection, immunity and the role of vaccines in disease prevention will be explained. Special fees apply. *Prerequisites: Successful completion of first semester veterinary courses.* Cross-listed with BIOL F632; MSL F637. (3+0)

## VETERINARY MEDICINE (DVM) — WILDLIFE (WLF)

**DVM F638 Veterinary Parasitology**  
2 Credits Offered Spring  
Biology of helminth, arthropod and protozoan pathogens of animals with emphasis on common infectious diseases encountered in veterinary practice will be discussed. In addition, the course will discuss treatment and management options for parasitic infections of domestic animals. **Prerequisites:** *Successful completion of first semester veterinary courses.* Cross-listed with BIOL F634; MSL F638. (2+0)

**DVM F639 Veterinary Virology**  
2 Credits Offered Spring  
This course will explore current concepts in the field of veterinary virology, with an emphasis on the viral structure, viral genetic material and viral replication strategies of various animal viruses. In addition, mechanisms of viral pathogenesis, prevention and treatment of viral infection will be presented. Special fees apply. **Prerequisites:** *Successful completion of first semester veterinary courses.* (2+0)

**DVM F640 Veterinary Pathology/Biology of Disease I**  
5 Credits Offered Spring  
This course will discuss basic principles of disease with special emphasis on processes likely to be encountered veterinary practice. We will discuss these topics organized by underlying disease mechanism. The discussions will move from general cell mediated processes to more specific disease mechanisms. **Prerequisites:** *Successful completion of first semester veterinary courses.* Cross-listed with BIOL F640; MSL F642. (4+3)

**DVM F648 Food Animal Production and Food Safety**  
2 Credits Offered Spring  
This course is designed to provide an understanding of food animal agriculture and food quality assurance. Students will explore contemporary production management systems of traditional and non-traditional food animal species. Animal welfare issues related to the raising of animals for food will be investigated. Students will learn where veterinary medicine fits into the protection of the human food supply. **Prerequisites:** *Successful completion of first semester veterinary courses.* (2+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. (1+4)

**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.* (1+4)

**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 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. Study in shielded metal arc (SMAW) focused on vertical, horizontal, and overhead positions with multiple passes using different techniques. Special fees apply. **Prerequisites:** *WMT F103; WMT F105.* (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. Attendance at first two classes is mandatory. Special fees apply. **Prerequisites:** *WMT F103; WMT F105; WMT F160; or permission of instructor.* (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)

**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 F290 Welding Proficiency Maintenance**  
3 Credits  
Maintenance of a high degree of welding proficiency through practice of previously-learned processes with an emphasis on AWS welding certification standards. Special fees apply. **Prerequisites:** *WMT F130; WMT F140; 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. Special fees apply. (1+0+1.5)

<p><b>WLF F301</b> <b>3 Credits</b> 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. Special fees apply. <i>Prerequisites or Co-requisites: WLF F101; MATH F151X or MATH F122X; or permission of the instructor. Recommended: STAT F200X or F300.</i> (2+3)</p>	<p><b>Design of Wildlife Studies</b> Offered Spring</p>	<p><b>WLF F460 O/2</b> <b>4 Credits</b> 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. Special fees apply. <i>Prerequisites: COMM F131X or COMM F141X; BIOL F310; BIOL F371; or permission of instructor.</i> Cross-listed with BIOL F459. Stacked with BIOL F659; WLF F660. (3+3)</p>	<p><b>Wildlife Nutrition</b> Offered Fall</p>
<p><b>WLF F304</b> <b>1-3 Credits</b> 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. Special fees apply. <i>Prerequisites: Permission of instructor.</i> (1-3+0)</p>	<p><b>Wildlife Internships</b></p>	<p><b>WLF F469 O</b> <b>3 Credits</b> 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. <i>Prerequisites: BIOL F371 or equivalent; COMM F121X or COMM F131X or COMM F141X.</i> Cross-listed with BIOL F469. Stacked with BIOL F669; WLF F669. (2+3)</p>	<p><b>Landscape Ecology and Wildlife Habitat</b> Offered As Demand Warrants</p>
<p><b>WLF F305</b> <b>3 Credits</b> Basic concepts of parasitic, infectious, environmental and nutritional diseases. Specific study of Alaska wildlife diseases. Basic necropsy technique and chemical immobilization. Special fees apply. <i>Prerequisites: BIOL F115X and BIOL F116X or equivalent; or permission of instructor. Recommended: BIOL F310; BIOL F317.</i> (2+3)</p>	<p><b>Wildlife Diseases</b> Offered Spring Odd-numbered Years</p>	<p><b>WLF F485 W</b> <b>3 Credits</b> Causes of climate change, the climate record, and the effects of past and forecast climate change on biophysical systems. Consideration of impacts on plants, animals, ice, and people with an emphasis on Alaska and the Arctic. Special fees apply. <i>Prerequisites: BIOL F371; CHEM F105X; CHEM F106X; ENGL F111X; ENGL F211X or ENGL F213X; or permission of instructor.</i> Cross-listed with BIOL F485. (3+0)</p>	<p><b>Global Change Biology</b> ✨ Offered Fall</p>
<p><b>WLF F322 W</b> <b>3 Credits</b> 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. Special fees apply. <i>Prerequisites: BIOL F371; WLF F101; ENGL F111X; ENGL F211X or ENGL F213X.</i> (2+3)</p>	<p><b>Principles and Techniques of Wildlife Management</b> Offered Fall</p>	<p><b>WLF F602</b> <b>3 Credits</b> 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. Special fees apply. <i>Prerequisite: Graduate standing; or permission of instructor.</i> Cross-listed with BIOL F602. (3+0)</p>	<p><b>Research Design</b> Offered Fall</p>
<p><b>WLF F410</b> <b>3 Credits</b> 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. Special fees apply. <i>Prerequisites: BIOL F371; calculus course; introductory STAT course; BIOL F471.</i> (2+3)</p>	<p><b>Wildlife Populations and Their Management</b> Offered Fall</p>	<p><b>WLF F604</b> <b>3 Credits</b> 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. Special fees apply. <i>Prerequisites: Graduate standing in Biology, Wildlife, or related discipline; permission of instructor.</i> Cross-listed with BIOL F604. (3+0)</p>	<p><b>Scientific Writing, Editing and Revising in the Biological Sciences</b> Offered Spring</p>
<p><b>WLF F421</b> <b>3 Credits</b> 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. Special fees apply. <i>Prerequisites: BIOL F371; WLF F322 or permission of instructor.</i> (3+0)</p>	<p><b>Ecology and Management of Large Mammals</b> Offered Fall Even-numbered Years</p>	<p><b>WLF F614</b> <b>2 Credits</b> 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. Special fees apply. <i>Prerequisites: Graduate standing; or permission of instructor.</i> Cross-listed with BIOL F614. (2+0)</p>	<p><b>Foraging Ecology</b> Offered Spring Odd-numbered Years</p>
<p><b>WLF F425 O</b> <b>3 Credits</b> 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. <i>Prerequisites: BIOL F371; COMM F131X or COMM F141X; WLF F322O; or permission of instructor.</i> (3+0)</p>	<p><b>Ecology and Management of Birds</b> Offered Spring Even-numbered Years</p>	<p><b>WLF F622</b> <b>3 Credits</b> 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. Special fees apply. <i>Prerequisites: BIOL F471 or WLF F410; graduate standing; or permission of instructor.</i> Cross-listed with BIOL F622. (3+0)</p>	<p><b>Current Issues in Conservation Biology</b> Offered Spring Odd-numbered Years</p>
<p><b>WLF F433</b> <b>3 Credits</b> 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. Special fees apply. <i>Prerequisites: BIOL F371 and BIOL F260 or equivalents; or permission of instructor. Recommended: BIOL/NRM F277.</i> Cross-listed with BIOL F433. Stacked with BIOL F633 and WLF F633. (3+0)</p>	<p><b>Conservation Genetics</b> Offered Spring</p>		

## WILDLIFE (WLF) — WOMEN'S AND GENDER STUDIES (WGS)

**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. Special fees apply. **Prerequisites:** *BIOL F371; 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. Special fees apply. **Prerequisites:** *BIOL F362; BIOL F371 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 F310; BIOL F371; 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 As Demand Warrants  
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)

**WLF F680**      **Data Analysis in Biology**  
**3 Credits**      Offered Fall  
Biological applications of nonparametric statistics, including tests based on binomial and Poisson distributions, analysis of two-way and multi-way 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. Special fees apply. **Prerequisites:** *STAT F200X, STAT F401; graduate standing in a biologically oriented field; or permission of instructor*. Cross-listed with BIOL F680. (2+3)

## 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. (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. **Recommended:** *One lower-division WGS or SOC course*. 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*. 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. **Prerequisites:** *SOC F100X or SOC F201 or PSY F101 or WGS F201 or permission of instructor. Recommended:* *PSY F275 or SOC F373*. 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 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 As Demand Warrants  
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 WGS F201; 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 (s)**  
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)

**WGS F499 Senior Thesis**  
1-3 Credits  
Graded Pass/Fail. *ENGL F211X or ENGL F213X; at least 9 credits in Women's and Gender Studies.* (0+0)

# UAF Administration, Faculty and Emeriti

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## GOVERNANCE

ASUAF.....	Mathew Carrick, President (2015-2016)
Faculty Senate.....	Debasmita Misra, President (2015-2016)
Staff Council.....	Faye Gallant, President (2015-2016)

## FACULTY

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
BBC	Bristol Bay Campus
CANHR	Center for Alaska Native Health Research
CC	Chukchi Campus
CDR	College of Natural Science and Mathematics Division of Research
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
EDE	eLearning and Distance Education
FS	Facilities Services
GI	Geophysical Institute
GRAD	Graduate School
IAB	Institute of Arctic Biology
IAC	Interior Alaska Campus
IARC	International Arctic Research Center
INE	Institute of Northern Engineering
KUC	Kuskokwim Campus
LIB	Elmer E. Rasmuson Library
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
SNRE	School of Natural Resources and Extension
SOE	School of Education
SOM	School of Management
USA	University and Student Advancement
VCAS	Vice Chancellor for Administrative Services
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.

**Adams, Barbara L.**—2007—Term Assistant Professor, SOE. Messiah College '91, BA; Northern Arizona University '93, MS; University of Alaska Fairbanks '02, PhD.

**Adkison, Milo D.**—1996—Professor of Fisheries (2010), SFOS. University of California, Davis '84, BS; Montana State University, Bozeman '89, MS; Montana State University '90, 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 (2010), CEM. Petroleum University of Technology, Ahwaz, Iran '00, BS; '03, MS; University of Texas at Austin '10, PhD.

**Ahn, Il Sang**—2014—Assistant Professor of Civil and Environmental Engineering (2014), CEM. Seoul National University '91, BS; '93, MS; State University of New York at Buffalo '05, PhD. P.E.

**Akdogan, Guven**—2013—Associate Professor of Mineral Processing (2014), CEM. Middle East Technical University (Turkey) '85, BS; '87, MS.

**Albertson, Leif E.**—2008—Associate Professor of Extension (2014), SNRE; Youth, Family and Community 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—Term Research Associate Professor (2011), 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; '83, BEd.

**Anahita, Jensine Martha**—2003—Associate Professor of Sociology (2008), CLA. Iowa State University '97, BS; '00, MS; '03, PhD.

**Andrecheck, Cynthia R.**—2007—Instructor (2009), KUC/CRCD.

**Andrews, Russel Don**—2002—Research Assistant Professor (2002), SFOS. University of California, Los Angeles '90, BS; University of British Columbia, Vancouver '99, PhD.

**Andrews, Susan B.**—1983—Professor of General Studies (2001), CRCD. Smith College '81, BA; University of Oregon '83, MA.

**Anger, Andreas Paul Wilhelm**—1994—Professor (2002), CTC/CRCD. University of Nebraska '90, MBA; University of Bayreuth, Germany '91, Diplom–Kaufmann.

**Aoki, Miho**—2001—Associate Professor of Art (2008), CLA. Aichi University, Japan '91, BEd; Ohio State University '98, MFA.

**Arkell, Frederick James**—2014—Assistant Professor of Business Administration (2014), SOM. Texas Tech University '86, BA; '89, JD.

**Arndt, Katherine Louise**—2010—Assistant Professor of Library Science (2010), Library. University of Wisconsin–Madison '74, BA; University of Alaska Fairbanks '77, MA; '96, PhD.

**Arp, Christopher Douglas**—2010—Research Assistant Professor (2010), WERC/INE. Utah State University '06, PhD.

**Arthur, Melanie Marie**—2007—Associate Professor of Sociology (2011), CLA. Rice University '92, BA; Johns Hopkins University '01, PhD.

**Atkinson, Judith Ann**—2002—Associate Professor of Developmental Mathematics (2009), CRCD. Eastern Kentucky University '88, BS; University of Alaska Fairbanks '93, MS; '02, PhD.

**Avdonin, Sergei Anatolievich**—2001—Professor of Mathematics (2001), CNSM. St. Petersburg State University '72, BS; '77, PhD.

**Bacsuljaky, Mara C.**—1998—Term Assistant Professor, Youth, Family and Community Development (2012), SNRE. University of Pennsylvania '86, BA.

**Baek, Jungho**—2009—Associate Professor (2013), SOM. Hanyang University '91, BA; Korea University '93, MA; Michigan State University '04, MA; '04, PhD.

**Baker, Carrie Crosby**—2005—Associate Professor of Theatre (2012), CLA. Middlebury College '96, BA; University of California, Irvine '02, MFA.

**Baker, Victoria Nan**—1999—Associate Professor (2010), 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; '75, MTech; Pennsylvania State University '79, MS; '82, PhD.

**Barboza, Peregrine Stephen**—1997—Professor of Biology (2002), CNSM/IAB. University of South Wales, Kensington '83, BSc (Hons; 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 (2000), CNSM. University of California, Riverside '77, BS; University of Washington '83, PhD.

**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.

- 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.
- Barry, Timothy Joseph**—2012—Term Assistant Professor (2012), CRCDC. University of Alaska Fairbanks '07, BS.
- Beaudreau, Anne**—2012—Assistant Professor (2012), SFOS. Harvard University '01, AB; University of Washington '09, PhD.
- Begét, James E.**—1984—Professor of Geology (1996), CNSM. Columbia University '74, BA; University of Washington '77, MS; '81, PhD.
- Bell, Scott Votaw**—2010—Associate Vice Chancellor for Facilities Services (2010), VCAS. University of Alaska Fairbanks '82, BS.
- Belz, Nathan P.**—2013—Assistant Professor (2013), CEM. University of Maine '06, BS; '08, MS; University of Vermont '13, PhD.
- Benowitz, Jeffrey Apple**—1999—Research Associate (2012), GI. University of Alaska Fairbanks '92, BS; '04, MFA; '12, PhD.
- Berge, Anna Mary Sophia**—2001—Associate Professor of Linguistics (2007), CLA. University of Wisconsin–Madison '88, BA; University of California, Berkeley '91, MA; '92, MLIS; '97, PhD.
- Berman Williams, Leah Wrenn**—2009—Associate Professor of Mathematics (2009), CNSM. Lewis and Clark College '97, BA; University of Washington '01, MS; University of Washington '02, 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 of Nutrition (2008), CNSM/IAB. University of California, Berkeley '99, BA; University of California, Davis '06, PhD.
- Bhatt, Uma S.**—1998—Professor (2014), CNSM/GI. 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, DMA.
- Billings, Frederick James**—2012—Assistant Professor of Psychology (2013), CLA. Lehigh University, BS; Western Washington University, MS; University of Texas, PhD.
- Blake, John E.**—1988—Associate Vice Chancellor for Research (2007), CRS; Director of Research Integrity (2001), CRS. University of Saskatchewan '80, DVM; '87, MVetSc.
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# Fairbanks Campus Academic Calendar 2015-2016

For academic calendar information for UAF's community campuses, contact the campuses directly or visit [www.uaf.edu/uaf/academics/](http://www.uaf.edu/uaf/academics/).

## FALL SEMESTER 2015

Fall 2015 course list available at UAOnline	Monday, March 23
Begin registration and fee payment for degree students for fall 2015 semester	Monday, April 6
Begin registration and fee payment for non-degree students for fall 2015 semester	Monday, April 13
Deadline to apply for admission for fall semester (UA Scholars)	Friday, May 1
Deadline to apply for admission for fall semester (graduate students)	Monday, June 15
Deadline to apply for admission for fall semester (undergraduate students)	Monday, June 15
Residence halls open, 8 a.m.	Sunday, Aug. 30
Orientation for new students	Sunday-Wednesday, Aug. 30-Sept. 2
First day of instruction; late registration begins	Thursday, Sept. 3
Labor Day (offices closed — no classes, registration or fee payment)	Monday, Sept. 7
Deadline for adding classes, late registration and fee payment; 5 p.m. in person, midnight at UAOnline	Friday, Sept. 11
Last day for 100 percent refund of tuition and fees	Friday, Sept. 18
Last day for student- and faculty-initiated drops (course does not appear on academic record)	Friday, Sept. 18
Freshman progress reports due	Sunday, Oct. 11
Deadline to apply for fall 2015 graduation	Thursday, Oct. 15
Spring 2016 course list available at UAOnline	Monday, Oct. 26
Last day for student- and faculty-initiated withdrawals (W grade appears on academic transcript)	Friday, Oct. 30
Begin registration and fee payment for spring 2016 semester	Monday, Nov. 9
Thanksgiving holiday (no classes, most offices closed)	Thursday-Sunday, Nov. 26-29
Last day of instruction	Monday, Dec. 14
Final examinations	Wednesday-Saturday, Dec. 16-19
Residence halls close, noon	Sunday, Dec. 20
Deadline for faculty to post grades, noon	Wednesday, Dec. 23
Winter holiday (no classes, most offices closed; reopen Monday, Jan. 4, at 8 a.m.)	Thursday-Sunday, Dec. 24-Jan. 3

## SPRING SEMESTER 2016

Deadline to apply for admission for spring semester (graduate students)	Thursday, Oct. 15
Spring 2016 course list available at UAOnline	Monday, Oct. 26
Deadline to apply for admission for spring semester (undergraduate students)	Sunday, Nov. 1
Begin registration and fee payment for degree students for spring 2016 semester and WINTERmester 2016	Monday, Nov. 9
Begin registration and fee payment for non-degree students for spring 2016 semester and WINTERmester 2016	Monday, Nov. 16
WINTERmester courses begin	Monday, Jan. 4
Deadline for adding WINTERmester classes; 5 p.m. in person at Summer Sessions, midnight at UAOnline	Monday, Jan. 4
Deadline for 100 percent refund of WINTERmester tuition and fees	Monday, Jan. 4
Deadline for WINTERmester fee payment; 5 p.m. in person, midnight at UAOnline	Monday, Jan. 4
Deadline for WINTERmester student- and faculty-initiated withdrawals (W grade appears on academic transcript)	Friday, Jan. 8
Residence halls open, 8 a.m.	Tuesday, Jan. 12
Orientation for new students	Wednesday, Jan. 13
First day of instruction; late registration begins	Thursday, Jan. 14
Alaska Civil Rights Day (no classes, most offices closed)	Monday, Jan. 18
Deadline for adding classes, late registration and fee payment; 5 p.m. in person, midnight at UAOnline	Friday, Jan. 22
Last day for 100 percent refund of tuition and fees	Friday, Jan. 29
Last day for student- and faculty-initiated drops (course does not appear on academic record)	Friday, Jan. 29
Freshman progress reports due	Sunday, Feb. 14
Deadline for UA Foundation and privately funded scholarship applications	Monday, Feb. 15
Deadline to apply for spring 2016 graduation	Monday, Feb. 15
Spring break (no classes)	Monday-Friday, March 14-18
University holiday (most offices closed for spring break)	Friday, March 18
Last day for student- and faculty-initiated withdrawals (W grade appears on academic transcript)	Friday, March 25

Begin registration and fee payment for fall 2016 semester (degree students) . . . . .	Monday, April 4
Begin registration and fee payment for fall 2016 semester (non-degree students) . . . . .	Monday, April 11
SpringFest (no classes) . . . . .	Friday, April 22
Last day of instruction . . . . .	Monday, May 2
Final examinations . . . . .	Tuesday-Friday, May 3-6
Commencement. . . . .	Sunday, May 8
Residence halls close, noon . . . . .	Monday, May 9
Deadline for faculty to post grades, noon . . . . .	Wednesday, May 11

**SUMMER SEMESTER 2016**

Summer 2016 course list available at UAOnline . . . . .	Monday, Feb. 1
Registration and fee payment for summer courses begin . . . . .	Monday, Feb. 29
Deadline to apply for admission for summer semester . . . . .	Sunday, May 1
MAYmester courses begin; attendance required.	
Deadline to register or for 100 percent refund of tuition and fees for MAYmester. . . . .	Monday, May 9
Late payment fees begin for MAYmester. . . . .	Tuesday, May 10
Deadline for student- and faculty-initiated withdrawals for MAYmester (W appears on academic transcript) . . . . .	Monday, May 16
Last day of MAYmester instruction . . . . .	Friday, May 20
First day of instruction for six-week session I and full session . . . . .	Monday, May 23
Deadline to register for six-week session I; attendance required on this day . . . . .	Wednesday, May 25
Memorial Day (no classes, most offices closed) . . . . .	Monday, May 30
Deadline to register for full session; attendance required . . . . .	Tuesday, May 31
Last day for 100 percent refund of tuition and fees for six-week session I and full session . . . . .	Tuesday, May 31
Late payment fees begin for six-week session I and full session . . . . .	Wednesday, June 1
Deadline to apply for summer 2016 graduation. . . . .	Wednesday, June 15
Last day for student- and faculty-initiated withdrawals (W appears on academic transcript) for six-week session I . . . . .	Wednesday, June 15
Last day of instruction for six-week session I . . . . .	Friday, July 1
Independence Day holiday (no classes, most offices closed) . . . . .	Monday-Tuesday, July 4-5
First day of instruction for six-week session II . . . . .	Wednesday, July 6
Deadline to register for six-week session II; attendance required on this day . . . . .	Monday, July 11
Last day for registration. Deadline for thesis and research credit payment (graduate students).. . . . .	Monday, July 11
Last day for 100 percent refund of tuition and fees for six-week session II . . . . .	Monday, July 11
Late payment fees begin for six-week session II . . . . .	Tuesday, July 12
Last day for student- and faculty-initiated withdrawals for full session (W appears on academic transcript) . . . . .	Tuesday, July 12
Last day for student- and faculty-initiated withdrawals for six-week session II (W appears on academic transcript) . . . . .	Wednesday, July 27
Last day of instruction for six-week session II and full session, including final exams . . . . .	Friday, Aug. 12
Deadline for faculty to post grades, noon . . . . .	Wednesday, Aug. 17

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