Anthropology

College of Liberal Arts
Department of Anthropology
(907) 474-7288
www.uaf.edu/anthro/

M.A., Ph.D. Degrees

Minimum Requirements for Degrees: M.A.: 30 credits; Ph.D.: 18 thesis credits

The anthropology program offers a balanced and flexible program of academic courses and research opportunities in cultural anthropology, linguistic anthropology, archaeology and biological anthropology. Anthropology contributes to an understanding of the complex problems of human behavior, biology, language, cultural and social organization, and the relationship of humans to their environments. Research carried out in the field, laboratory and library emphasizes past and present modes of living and the origins and distribution of peoples and cultures throughout the world, with special attention to the circumpolar North.

The graduate program emphasizes general preparation in the field of anthropology. Such preparation enables graduates of the master's program to pursue more advanced training leading to the Ph.D. in anthropology, prepares them to teach anthropology within secondary education and/or undergraduate levels of higher education or prepares students for career positions with various levels of government in which some anthropological background and/or expertise is beneficial. Field research in Alaska is a common experience for graduate students in anthropology. All students must have fieldwork and laboratory experience appropriate to the discipline or subdiscipline.

The primary focus of the Ph.D. program is on the circumpolar North, although graduate students and faculty also conduct research elsewhere, in particular Africa and North America. The Ph.D. is available with an emphasis in any of the four subfields of anthropology.

Graduate Program—M.A. Degree

1. Complete the admission process including the following:
   a. Submit GRE scores.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete the following:
   ANTH 629—Structures of Anthropological Argument 3
   ANTH 652—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 4 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 631—Language and Culture Seminar 3
   ANTH/LING 632—Field Methods in Descriptive Linguistics 3
6. Complete 1 of the following:
   ANTH 698—Research (6)
   or ANTH 699—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 600-level.

Graduate Program—Ph.D.

1. Complete the admission process including the following:
   a. Submit GRE scores.
2. Complete the general university requirements (page 166).
3. Complete the Ph.D. degree requirements (page 169).
4. Complete course work in anthropology and related disciplines as determined by the advisory committee.
5. Complete 1 foreign language and a research tool, or 2 foreign languages.
6. Minimum credits required.....18

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Arctic Engineering

College of Science, Engineering and Mathematics
Department of Civil and Environmental Engineering
(907) 474-7241
www.uaf.edu/civileng/cee.html

M.S. Degree

Minimum Requirements for Degree: 30 credits

The arctic engineering program trains graduate engineers to deal with the challenges of design, construction and operations in cold regions of the world. Climatic, geological and logistical conditions of the Arctic and subarctic create special problems and require knowledge and techniques not usually covered in engineering courses.

A thorough understanding of heat transfer processes is of primary importance, and the properties of frozen ground and water are basic to most engineering in the Arctic. Arctic conditions also uniquely affect hydraulics, hydrology and utility operations.

Core required courses in the arctic engineering program teach engineers to understand and adapt to cold region problems. Students round out the program with advanced elective courses in a particular field of interest. Arctic engineering research carried out by faculty can provide students with opportunities for theses or project papers dealing with the most current arctic knowledge.

Development of petroleum and other natural resources has accentuated the demand for engineers who understand northern operations. Skilled engineers are needed both in the private industries that are involved in development and within the government agencies that plan and regulate development activity.

Graduate Program—M.S. Degree

1. Complete the general university requirements (page 166).
2. Complete the master's degree requirements (page 170).
3. Complete at least 5 of the following core courses:
   - CE 681—Frozen Ground Engineering 3
   - CE 682—Ice Engineering (3)
     or GEOS 615—Sea Ice (3) 3
   - CE 683—Arctic Hydrology and Hydraulic Engineering 3
   - CE 684—Arctic Utility Distribution 3
   - ME 685—Arctic Heat and Mass Transfer 3
   - ME 687—Arctic Materials Engineering 3
4. CE 698 or 699—Thesis or Project 3
5. Electives * 12-15
6. Minimum credits required 30

** All electives must be in areas related to or supportive of the student's degree program and approved by the student's graduate advisory committee.*

Note: CE 603—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 Science Management.
See Environmental Engineering and Environmental Quality Science.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Art

College of Liberal Arts
Department of Art
(907) 474-7530
www.art.uaf.edu/

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 vacancies. Career opportunities include placement in state and federal arts organizations, galleries, museums, colleges and universities. This degree includes contemporary art world issues, the historic role of the artist and northern art. The M.F.A. degree in visual art is a terminal degree. Study is two-thirds in studio art. The degree culminates in a solo gallery exhibition.

Graduate Program—M.F.A. Degree

Concentrations: Ceramics, Computer Art, Drawing, Native Arts, Painting, Photography, Printmaking, Sculpture

1. Complete the following admission requirements:
   a. Submit a separate portfolio 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 170).
3. Complete the following:
   ART 661—Mentored Teaching in Art 1
   ART 663—Seminar in Art History 3
   ART 690—Current Problems 3
   ART 698—MFA Project* (5)
   or ART 699—MFA Thesis* (5) 5
   Electives in art history, humanities or philosophy** 6
4. Complete at least 2 studio areas at the 600-level*** 39
5. Minimum credits required 60

** Studio with 2 hours oral comprehensive examination*

*** The 400-level classes in these areas can be taken with additional requirements. Courses may be chosen from the following: ART 624, 625, 663 and 673.*

**** Courses may be chosen from the following: ART 601, 607, 611, 613, 619, 672, 684, JRN 605.*

Note: Graduate students are required to be enrolled in a mentored teaching section while teaching.

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Atmospheric Sciences

College of Science, Engineering and Mathematics
Atmospheric Sciences Program
(907) 474-7608
www.uaf.edu/csem/

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 have active research programs in high-latitude atmospheric science that include faculty from the biology, chemistry, physics and other departments. Current research by atmospheric sciences focuses on: atmospheric chemistry/ biogeochemistry, climate modeling, cloud and aerosol physics, mesoscale modeling, numerical weather prediction and aviation weather. In addition, scientists affiliated with the research institutes conduct research on ocean-atmosphere interactions, dynamic meteorology, microclimatology, polar meteorology, radiative transfer, cryosphere-atmosphere interactions and remote sensing.

Graduate students are an integral component of this research, both in the laboratory and the field. Research institutes provide excellent environments for research in atmospheric science as well as interdisciplinary research with scientists in other research areas.

Graduate Program—M.S. Degree

1. Complete the general university requirements (page 166).
2. Complete the master's degree requirements (page 170).
3. Complete the following basic courses in atmospheric sciences:
   ATM 601—Introduction to Atmospheric Science 3
   ATM 606—Atmospheric Chemistry 3
   ATM 609—Atmospheric Thermodynamics 3
   ATM 613—Atmospheric Radiation 3
   ATM 645—Atmospheric Dynamics 3
4. Complete additional approved 600-level courses..... 9
5. Complete ATM 699—Thesis..... 6-12
6. Minimum credits required..... 30

Graduate Program——Ph.D. Degree

1. Complete the general university requirements (page 166).
2. Complete the Ph.D. degree requirements (page 169).
3. Complete the following basic courses in atmospheric sciences:
   ATM 601—Introduction to Atmospheric Science 3
   ATM 606—Atmospheric Chemistry 3
   ATM 609—Atmospheric Thermodynamics 3
   ATM 613—Atmospheric Radiation 3
   ATM 645—Atmospheric Dynamics 3
4. Complete the additional course requirements determined in conjunction with the graduate advisory committee.
5. Minimum credits required..... 18

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Biochemistry and Molecular Biology

College of Science, Engineering and Mathematics
Department of Chemistry and Biochemistry
(907) 474-5510
www.uaf.edu/chem/

M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits;
Ph.D.: 18 thesis credits

Alaska presents rich opportunities for biochemical and molecular biological research. Plants and animals living in the Arctic have evolved remarkable genetic and biochemical adaptations to the region's characteristic low temperatures and dim sunlight. For instance, a large algae that inhabits the floor of the Beaufort Sea along the northern coast of Alaska stores carbohydrates during the continuous daylight of the arctic summer, then uses that carbohydrate for growth during the long arctic night under the pack ice. Our understanding of the molecular mechanisms underlying this adaptation is far from complete, and solutions to this and many other fascinating biochemical problems beckon researchers to the Arctic.

The biochemistry and molecular biology program utilizes faculty from many UAF departments and research institutes and emphasizes an understanding of the molecular principles involved in life processes. The program provides academic and research experience for both undergraduate and graduate students who are interested in careers in the growing area of biotechnology. This program may be especially attractive to students interested in medicine.

Graduate Program—M.S. Degree

1. Complete the general university requirements (page 166).
2. Complete the master's degree requirements (page 170).
3. Complete a thesis.
4. Minimum credits required.....30

Graduate Program—Ph.D. Degree

1. Complete the general university requirements (page 166).
2. Complete the Ph.D. degree requirements (page 169).
3. Complete program courses.....12
4. Complete electives.....4
5. Minimum credits required.....18

See Chemistry.
See Environmental Chemistry.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Biological Sciences

College of Science, Engineering and Mathematics
Department of Biology and Wildlife
(907) 474-7671
http://mercury.bio.uaf.edu/

Ph.D. Degree

Minimum Requirements for Degree: 18 thesis credits

The biological sciences program provides a broad education as well as a sound foundation in the basic principles of biology. Candidates who expect to teach in public secondary schools must be sure that education requirements are met.

Graduate Program—Ph.D. Degree

Concentrations: Biology, Botany, Wildlife Biology, Zoology

1. Complete the admission process including the following:
   a. Submit scores from both the GRE General Test (required) and the GRE Subject Test in Biology (required for applicants holding only a bachelor's degree; highly recommended for applicants who have already earned a master's degree).
   b. If English is not your native language, submit scores from both the Test of Spoken English (TSE) and the Test of Written English (TWE), as well as TOEFL scores. Requests, including justification, for exceptions to this requirement should be made to the Chair of the department.
2. Complete the general university requirements (page 166).
3. Complete the Ph.D. degree requirements (page 169).
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 (equivalent to Master's Comprehensive Examination).
   b. Complete and pass a written and oral comprehensive examination by the Graduate Advisory Committee.
   c. In this program or in previous post-baccalaureate programs, complete course work at least equivalent to that required for the M.S. degree.
5. Minimum credits required.....18
   See Biology.
   See Botany.
   See Wildlife Biology.
   See Zoology.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Biology

College of Science, Engineering and Mathematics
Department of Biology and Wildlife
(907) 474-7671
http://mercury.bio.uaf.edu/

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

Minimum Requirements for Degrees: M.S.: 30 credits;
M.A.T.: 36 credits

UAF biology 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 NSF taiga Long Term Ecological Research (LTER) site, located about 20 miles from campus. Our students also have access to the tundra LTER site at Toolik Lake, where the UAF Institute of Arctic Biology runs a field station.

Facilities available to graduate students on the Fairbanks campus include small mammal colonies, the Large Animal Research Station, both electron and light microscope laboratories, an imaging laboratory and a greenhouse facility. Students and faculty work on systematic collections in the UA Museum using a variety of approaches from traditional morphology to molecular biology.

The program has strong research emphasis 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 gone into 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.

Graduate Program—M.S. Degree

1. Complete the admission process including the following:
   a. Submit scores from both the GRE General Test (required) and the GRE Subject Test in Biology (highly recommended).
   b. If English is not your native language, submit scores from both the Test of Spoken English (TSE) and the Test of Written English (TWE), as well as TOEFL scores. Requests, including justification, for exceptions to this requirement should be made to the Chair of the department.
2. Complete the general university requirements (page 166).
3. Complete the M.S.—with Thesis degree requirements (page 171).
4. As part of the M.S. degree requirements, complete and pass the departmental written and oral Master's Comprehensive Examination.
5. Minimum credits required.....30

Graduate Program—M.A.T. Degree

1. Complete the admission process including the following:
   a. Submit scores from both the GRE General Test (required) and the GRE subject Test in Biology (highly recommended).
   b. If English is not your native language, submit scores from both the Test of Spoken English (TSE) and the Test of Written English (TWE), as well as TOEFL scores. Requests, including justification, for exceptions to this requirement should be made to the chair of the department.
2. Complete the general university requirements (page 166).
3. Complete the M.A.T. degree requirements (page 171).
4. Minimum credits required.....36

Note: Persons interested in this degree program should contact the department chair.

See Biological Sciences for Ph.D. program.
See Botany.
See Wildlife Biology.
See Zoology.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Botany

College of Science, Engineering and Mathematics
Department of Biology and Wildlife
(907) 474-7671
http://mercury.bio.uaf.edu/

M.S. Degree

Minimum Requirements for Degree: 30 credits

Graduate Program—M.S.

1. Complete the admission process including the following:
   a. Submit scores from both the GRE General Test (required) and the GRE Subject Test in Biology (highly recommended).
   b. If English is not your native language, submit scores from both the Test of Spoken English (TSE) and the Test of Written English (TWE), as well as TOEFL scores. Requests, including justification, for exceptions to this requirement should be made to the Chair of the department.
2. Complete the general university requirements (page 166).
3. Complete the M.S.—with Thesis degree requirements (page 171).
4. As part of the M.S. degree requirements, complete and pass the departmental written and oral Master's Comprehensive Examination.

4. Minimum credits required.....30

See Biological Sciences for Ph.D. program.
See Biology.
See Wildlife Biology.
See Zoology.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Business Administration

School of Management
Department of Business Administration
(907) 474-7253
www.uaf.edu/som/bad.html

M.B.A. Degree

Minimum Requirements for Degree: 30 credits

The business administration department 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 in both breadth and depth. The graduate program is accredited by AACSB—the International Association for Management Education.

Graduate Program—M.B.A. Degree

Concentrations: Capital Markets, General Management

1. Complete the admission process including the following:
   a. Submit results from the GMAT.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete the following foundation courses if previous college work is not in business:
   ACCT 602—Accounting for Managers 3
   BA 325—Financial Management 3
   BA 330—The Legal Environment of Business 3
   BA 343—Principles of Marketing 3
   BA 360—Operations Management 3
   BA 390—Organizational Theory and Behavior 3
5. Complete the following advanced M.B.A. core courses after all foundation course requirements (part 4) are completed:
   BA 617—Organizational Theory for Managers 3
   BA 643—Marketing Management 3
   BA 675—Quantitative Methods for Managers 3
   BA 680—Financial Markets and Strategy 3
6. Complete the following capstone course:
   BA 690—Corporate Strategy 3
7. Complete 1 of the following concentrations:

Capital Markets

a. Complete 4 of the following:
   ACCT 630—Taxation and Management Decisions 3
   BA 620—Portfolio Theory and Asset Pricing 3
   BA 630—Derivative Securities 3
   BA 681—Fixed Income Securities and Markets 3
   BA 682—Financial Statement Analysis 3
b. Complete 1 approved elective at the 400- or 600-level 3
c. Minimum credits required 30

General Management

a. Complete 4 of the following:
   ACCT 650—Management Accounting Seminar 3
   AIS 673—Technology Management 3
   BA 607—Human Resources Management 3
   BA 647—Compensation Issues and Management 3
   BA 660—Seminar in Operations Management 3
   BA 670—Seminar in Multinational Business Management 3
   BA 682—Financial Statements Analysis 3
   BA 683—Advanced Topics in Marketing 3
   BA 691—Advanced Topics in Business 3
b. Complete 1 approved elective at the 400- or 600-level 3
c. Minimum credits required 30

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Chemistry

College of Science, Engineering and Mathematics
Department of Chemistry and Biochemistry
(907) 474-5510
www.uaf.edu/chem/

M.A., M.S. Degrees

Minimum Requirements for Degrees: 30 credits

Graduates in chemistry qualify for employment in many fields as teachers of chemistry; supervisors in industry; technical sales personnel; research chemists in federal, state, municipal, academic or industrial laboratories; in pre-medicine; and as laboratory technicians. The rapid introduction of chemical techniques in all branches of commerce and the creation of many synthetic products have caused substantial growth in the profession. In addition to the traditional employment opportunities in chemistry, well-qualified graduates find positions in the fields of environmental sciences, oceanography and related interdisciplinary fields. Many recipients of chemistry master's degrees continue their education to obtain Ph.D. degrees at other universities.

The department offers well-equipped laboratories housing instrumentation for nuclear magnetic resonance spectrometry, infrared, ultraviolet/visible, and atomic absorption spectrophotometry, mass spectrometry, gas chromatography, amino acid analysis and HPLC. Additional equipment for gas chromatography/mass spectrometry, x-ray diffractometry, electron microscopy and liquid scintillating counters is available in cooperation with other UAF departments and institutes.

Graduate Program—M.A. Degree*

1. Complete the requirements for the M.S. degree in chemistry.

   ** This is a non-thesis degree program. Substitute a research project (CHEM 698) for thesis.*

Graduate Program—M.S. Degree

1. Complete the general university requirements (page 166).
2. Complete the master's degree requirements (page 170).
3. Complete a research-based thesis.
4. Complete seminar.....2
5. Complete at least 1 semester of assisting in an undergraduate chemistry laboratory.
6. Minimum credits required.....30

   See Biochemistry and Molecular Biology.
   See Chemistry.
   See Environmental Chemistry.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Civil Engineering

College of Science, Engineering and Mathematics
Department of Civil and Environmental Engineering
(907) 474-7241
www.uaf.edu/civileng/cee.html

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 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. Civil engineers continue to provide a significant contribution to society. The UAF civil engineering program has been accredited since 1940 and presently 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.

Graduate Program—M.C.E. Degree

1. Complete the following admission requirements:
   a. Complete a bachelor's degree in civil engineering.
   b. International students must complete the TOEFL with a score of 575 or better.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete a project..... 3-6
5. Minimum credits required.....30

   Note: M.C.E. candidates will have passed a State Engineer-in-Training Examination prior to the awarding of the degree.

Graduate Program—M.S. Degree

1. Complete the following admission requirements:
   a. Complete a bachelor's degree in civil engineering.
   b. International students must complete the TOEFL with a score of 575 or better.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete a thesis..... 6-12
5. Minimum credits required.....30

   See Arctic Engineering.
   See Engineering for Ph.D. program.
   See Engineering Management.
   See Science Management.
   See Environmental Engineering and Environmental Quality Science.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Communication, Professional

College of Liberal Arts
Department of Communication
(907) 474-6591
www.uaf.edu/comm/

M.A. Degree

Minimum Requirements for Degree: 30-34 credits

The communication program prepares students to handle the challenges of communicating effectively and ethically in a rapidly changing world characterized by diversity in gender, cultural background and belief.

The M.A. in professional communication provides advanced education for individuals in or pursuing communication related careers in public/nonprofit organizations, media organizations, health care organizations or in higher education. Students take courses that focus on organizational communication theory and practices.

The program is both theoretically and pragmatically oriented to prepare students for the professional workplace or for doctoral study in organizations.

Graduate Program—M.A. Degree

1. Complete the general university requirements (page 166).
2. Complete the master's degree requirements (page 170).
3. Complete the following:
   a. COMM 600—Introduction to Professional Communication....3
      COMM 601—Communication Research Methodologies (Social Science).....3
      COMM 602—Communication Research Methodologies (Human Science).....3
      COMM 625—Communication Theory.....3
      COMM 675—Training and Development Communication.....3
      COMM 680—Communication and Diversity in the Professional World.....3
      COMM 699—Thesis*.....6
   b. Complete 2 of the following electives:**
      COMM 622—Interpersonal Interaction.....3
      COMM 635—Organizational Culture and Communication.....3
      COMM 642—Health Communication.....3
      COMM 682—Seminar in Communication.....3
   c. Teaching assistants complete the following:
      COMM 661—Mentored Teaching in Communication***.....1-4
4. Minimum credits required..... 30-34

** Students in the journalism concentration who elect to complete a non-thesis project should take 6 credits of JRN 698 rather than COMM/JRN 699.*

*** Students may take 400- and 600-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 400-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.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Computer Science

College of Science, Engineering and Mathematics
Department of Mathematical Sciences
(907) 474-7332
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 potential for employment is one of the highest in the entire range of subjects spanned by the College of Science, Engineering and Mathematics.

The M.S. degree follows the recommendations of the Association for Computing Machinery (ACM) and the Institute for Electrical and Electronic Engineers (IEEE).

The computer science graduate program follows the recommendations of the ACM and IEEE. This 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. 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 (TSE).

Graduate Program—M.S. Degree

1. Complete the UAF admission process including the following:
   a. Submit GRE general and computer science subject exam scores.
   b. For teaching assistantship consideration, foreign applicants whose native language is not English must submit a TOEFL score of at least 600.
   c. The department gives preference to applicants who also submit results of the Test of Spoken English (TSE).
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete the following:
   CS 611—Complexity of Algorithms 3
   CS 631—Programming Language Implementation 3
   CS 641—Advanced Systems Architecture 3
   CS 671—Advanced Software Engineering 3
   CS 690—Graduate Seminar and Project 3
   CS 691—Graduate Seminar and Project 3
   Approved electives 12
5. Minimum credits required 30

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Cross-Cultural Studies

College of Liberal Arts
Department of Alaska Native Studies
(907) 474-1902
www.uaf.edu/cxcs/

M.A. Degree

Minimum Requirements for Degree: 36 Credits

The cross-cultural studies M.A. degree program emphasizes indigenous knowledge systems. The program is designed to provide graduate students, from various fields of interest, an opportunity to pursue in-depth study of the role and contributions of indigenous knowledge in the contemporary world. Students are expected to demonstrate the ability to work effectively with indigenous people in their studies.

Graduate Program—M.A. Degree

1. Complete the general university requirements (page 166).
2. Complete the master's degree requirements (page 170).
3. Complete at least 6 credits in a field setting, including minimum of one week camp w/Elders.
4. Complete at least 36 semester hours beyond the bachelor's degree level. (Students may transfer a maximum of 9 hours from another university into their program.)
5. Complete at least 30 of the 36 semester hours at the 600-level.
6. Complete a satisfactory performance on a comprehensive examination.
7. Complete the following core courses:
   CCS 601—Documenting Indigenous Knowledge 3
   CCS 608—Indigenous Knowledge Systems 3
   CCS 612—Traditional Ecological Knowledge 3
   CCS/ED 690—Seminar in Cross-Cultural Studies 3
8. Complete at least 1 of the following cross-cultural studies specialization courses:
   ANS/ED 461—Native Ways of Knowing 3
   CCS/ED 610—Education and Cultural Processes 3
   RD 425—Cultural Impact Analysis 3
9. Complete a minimum of 15 credits of approved electives to provide specialization depth. Example of approved electives include the following:
   ANS 475—Alaska Native Social Change 3
   CCS 602—Cultural and Intellectual Property Rights 3
   CCS/ED 603—Field Study Research Methods 3
   CCS/ED 611—Cultural, Cognition and Knowledge Acquisition 3
   CCS/ED 613—Alaska Standards for Culturally Responsive Schools 3
10. Complete CCS 698—Field Study/Elder Apprenticeship 6
11. Minimum credits required 36

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Economics, Resource and Applied

School of Management
Department of Economics
(907) 474-7119
www.uaf.edu/som/ed.html

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, for example, fisheries, wildlife management, land resources management, agriculture, oil and minerals, water resources and forest management.

The program consists of core course work in micro- and macro-economic theory, mathematical economics, economic methods and courses in the economic theory and public policy of natural resources. Master's candidates may select a thesis or non-thesis option. Thesis topics, consistent with students' interest and project requirements, may be selected from current research projects of the department or from one of the several research institutes on campus. Most research projects deal with issues pertinent to the development and management of Alaska's renewable and nonrenewable resources.

Graduate Program—M.S. Degree

1. Complete the general university requirements (page 166).
2. Complete the master's degree requirements (page 170).
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 1 semester of calculus.
4. Complete the following:
   ECON 601—Microeconomic Theory I 3
   ECON 603—Macroeconomic Theory 3
   ECON 623—Mathematical Economics 3
   ECON 626—Econometrics 3
   ECON 635—Resource Economics I 3
   ECON 636—Resource Economics II 3
5. Complete the thesis or non-thesis requirements:

Thesis*

a. Complete the following:
   ECON 699—Thesis 6
   Electives 6
b. Minimum credits required 30

Non-Thesis*

a. Complete the following:
   ECON 698—Project 3
   Electives at the 600-level 6
   Electives 6
b. Minimum credits required 33

** Complete at least 25 credits at the 600-level.*

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Education

School of Education
(907) 474-7341
www.uaf.edu/educ/

M.Ed. Degree and Post-Baccalaureate Licensures

Minimum Requirements for M.Ed.: 30 credits;
Post baccalaureate elementary licensure: 35-39 credits;
Post baccalaureate secondary licensure: 33 credits;
Music K-12 licensure: 33 credits (Contact the music department (907) 474-7555)

UAF serves students from all of Alaska as well as from other states and nations. It is particularly committed to enhancing the educational opportunities for Alaska's rural and Native populations.

Through its rural campuses, the university is responsive to local and regional needs, including open educational access to its programs. Special strengths exist in the use of educational technology which provides distance delivery of selected programs to many areas of the state.

UAF education programs prepare educators to work in urban and rural Alaska and to work with multicultural and minority students, especially Alaska Native students.

The School of Education offers a master of education, and post baccalaureate course work and internship experiences preparing candidates for Alaska state licensure in teaching (Type A).

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. Education programs include programs offered on the Fairbanks campus and through the branch campus centers. School of Education faculty are located at the Fairbanks campus and at several branch campuses in keeping with the school's commitment to preparing educators for rural Alaska. Courses are available on-site and by distance delivery through the Kuskokwim (Bethel), Bristol Bay (Dillingham and Naknek), Interior-Aleutians (Unalaska and rural education centers throughout the Interior), Chukchi (Kotzebue) and Northwest (Nome) 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.

Licensure Information

UAF education programs are approved by the Alaska State Board of Education as meeting National Association for State Directors of Teacher Education and Certification (NASDTEC) standards. For information about these programs contact the Student Services Office in the UAF School of Education, or contact the rural faculty at the nearest campus.

As of December 1, 1998, the state of Alaska requires that all initial applicants for a regular Type A certificate provide evidence of passing Alaska qualifying scores on the Praxis I; Academic Skills Assessment including the Pre-Professional Skills Test (PPST) and/or the Computer-Based Academic Skills Assessment (CBT).

The state of Alaska requires the completion of 3 credits of approved course work in Alaska Studies and 3 credits in multicultural or cross-cultural education in order to receive an initial five-year teaching license. A two-year provisional license can be obtained without meeting this requirement. Contact the School of Education's Student Services Office for a current list of approved courses.

Elementary Post-Baccalaureate Licensure Program

Offered through the Elementary Teacher Education Partnership (ETEP) program in Fairbanks and through the Rural Educator Preparation Partnership (REPP) program through distance delivery, the elementary teacher post-baccalaureate program is an intensive, year-long program designed to provide students with the course work and internship experience necessary to meet the Alaska Teacher Standards and be eligible for licensure as an elementary teacher in Alaska. This classroom-based program is built upon the principle of partnership—a cooperative effort between interns, mentor teachers, and university faculty partners. Students have the option of completing the program at the undergraduate or graduate level.

Students choosing the graduate option begin the program in the summer with a 9-credit block of courses. Students who complete the undergraduate courses ED 110, 201, 330, 410, and EDSE 482 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.

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 Type A Elementary License. Students who have completed the Alaska Studies and the Multicultural Education/Cross-Cultural Communication courses required by the Alaska Department of Education will be eligible for a five-year license. Others will be eligible for a two-year provisional license.

Elementary applicants who apply as graduate-level licensure students may choose to complete this licensure program as part of the M.Ed. degree in Curriculum and Instruction. However, application to the M.Ed. degree program should be made at the beginning of elementary post-baccalaureate course work to avoid losing credits for the M.Ed. degree. (See M.Ed. Curriculum and Instruction option requirements.)

Admission and Application Information

It is recommended that students submit applications before December 15 to provide time to complete prerequisites if necessary. Applications will be reviewed as submitted. Deadline is March 1.

Admission includes meeting both UAF graduate admissions requirements and the School of Education admissions requirements.

Submit the following directly 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. A grade point average of at least 3.0 (B grade) in undergraduate degree is required but students with less than a 3.0 may be considered for conditional admission in special circumstances.
3. Graduate Record Examination (GRE) scores if undergraduate GPA is below 3.0.
4. Three letters of reference that address qualifications and potential as a teacher.

5. A vitae/resume.
6. Four-to-five-page essay indicating: reasons for becoming a teacher, assessment of academic and personal strengths relative to teaching, future plans, and reasons for selecting the elementary post-baccalaureate program.

Submit the following information directly to the School of Education:

1. Alaska passing scores from the Praxis I exam in reading, writing and mathematics.
2. Completed academic analysis form to provide information on breadth and depth of prior course work relative to 10 Alaska Student Content Standard areas. Additional course work may be required. 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. Completed Alaska Department of Education and Early Development authorization packet (fingerprint cards and criminal background check). Packet is available from the School of Education. Contact the School of Education for additional information.
5. Interns will be required to submit negative TB test results to their placement schools. 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 110, 201, 330, 410 and EDSE 482 prior to August 1 of the internship year.
   - ED 624—Foundations of Education in Alaska: From Segregation to Standards*.....3
   - ED 625—Exceptional Learners and Child Development: Individual and Cultural Characteristics.....3
   - ED 626—Teaching Reading, Writing and Language Arts.....3

   ** ED 624 meets the state of Alaska requirement for an approved multicultural/ cross-cultural communication course.*
2. During the fall semester complete the following:
   - ED 411—Reading, Writing, Language Arts: Methods and Curriculum Development.....3
   - ED 412W—Integrated Social Studies and Language Arts: Methods and Curriculum Development.....3
   - ED 466—Internship and Collaborative Student Teaching.....3
   - ED 467—Portfolio Development.....1
   - ED 478/678—Integrated Mathematics and Science: Methods and Curriculum Development.....4
3. During the spring semester complete the following:
   - ED 310—Art, Music and Drama in the Elementary Classroom.....2
   - ED 327—Physical Education and Health Education for Elementary Teachers.....2
   - ED 468O—Internship and Student Teaching.....6
   - ED 469—Portfolio Development II.....2
4. Minimum credits required..... 35-39

Secondary Post-Baccalaureate Licensure Program with M.Ed., Curriculum and Instruction Option

Offered in Fairbanks or by distance delivery through the Rural Educator Preparation Partnership Program (REPP), this is an intensive, classroom-based secondary licensure program (33 credits) that prepares post-baccalaureate candidates for secondary (grades 7-12) teaching positions. The program is specifically designed to prepare candidates to teach in multicultural settings in Alaska. Content that addresses multicultural issues in general, and Alaska rural issues in particular, is contained specifically in EDSC 657, Multicultural Education and School-Community Relations, and is a fundamental component of the course work within the program. In a year when funding is available, a rural practicum is required of all secondary candidates completing their program. Upon request and successful completion of a yearlong internship, course work and state of Alaska licensure requirements, candidates are recommended for a teaching license. Candidates who have completed a state of Alaska approved Alaska studies course will be eligible for a five-year Type A license. Others will be eligible for a two-year Type A provisional license. The program is accredited by NASDTEC and under NASDTEC standards until 2006.

Candidates who apply as graduate applicants may simultaneously pursue teacher licensure and the M.Ed. Curriculum and Instruction degree. Significant additional course work will be required. (See requirements for M.Ed. Curriculum and Instruction secondary option.)

Admissions Process and Requirements

Admission to the graduate level secondary post-baccalaureate licensure program with M.Ed. in Curriculum and Instruction option for secondary education candidates includes meeting requirements of the UAF Graduate School and the School of Education. Graduate candidates will take five of the licensure courses at the graduate (600) level.

Submit the following information directly to UAF Office of Admission

1. UAF graduate application and application fee.
2. Official transcript of bachelor's degree from accredited institution.
3. Graduate Record Examination scores if undergraduate GPA is less than 3.0.
4. Three current letters of reference that address qualifications and potential as a teacher.
5. A vitae/resume.
6. A personal statement indicating reasons for becoming a teacher, assessment of academic and personal strengths relative to future teaching plans, description of direct experience with adolescents in supervisory or instructional capacities, and reason for selecting the secondary post-baccalaureate licensure program.

Submit the following information directly to the School of Education

1. Alaska Passing scores from the Praxis I exam in reading, writing and mathematics.
2. Extemporaneous writing sample. Contact the School of Education Advising Office for date, time and location information.
3. Demonstrated evidence of technology competence or completion of ED 429, Computer Applications in the Classroom, or an equivalent course approved by the School of Education.

4. Demonstrated evidence of completion of degree in a content area suitable for teaching in a public secondary school as determined by the School of Education/Appropriate Academic Department.
   a. Additional content courses may be recommended or required for placement in a secondary internship. Candidates should seek early advising regarding content requirements.
   b. All candidates applying for admission to the secondary post-baccalaureate licensure program in Spring 2006 or later, will be required to meet new undergraduate degree requirements as listed in admission checklists.
   c. Evaluation of transcript for equivalency of an academic major may be requested.
   d. Candidates may request an evaluation for content equivalency from the School of Education in interdisciplinary social studies and interdisciplinary English/language arts.
   e. Praxis II passing scores as set by the state of Alaska (currently available in mathematics, English, general science, French and German) may be used to support competency in these areas.
   f. The Department of Education and Early Development will, upon request, add additional endorsement areas based on an 18 credit minor posted on an interns' transcript.
5. Applicants must submit a placement packet, contact School of Education for specifics. The School of Education determines placement approval, change or termination.

Application Review Process

Applications are due on March 1 and are reviewed thereafter for admission in the summer semester. Applications of outstanding candidates may be considered through spring semester. A candidate may be admitted, not admitted, or admitted with stipulations. Stipulations are specified when additional development in particular area(s) is needed before beginning a secondary post-baccalaureate program.

The UAF School of Education coordinates the review and evaluation of the candidate's qualifications, professional experiences and academic performance with appropriate academic departments based on the contents of his/her application. The secondary post-baccalaureate program is a selective teacher education program. A comprehensive system including more than one measure is used to assess the personal characteristics, communication skills, and basic skills proficiency 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.

Specific criteria for entry to the secondary teaching intern -ship are:

* Successful completion of summer program courses.
* Approval of faculty to enter the Secondary Education Internship.
* Candidates will be required to submit negative TB test results to their placement schools. Some school districts may require candidates to submit a physical examination form.
* State Alaska Certificate of Authorization, fingerprint cards and money order in the amount of $66 to the School of Education by June 1st (this fee is non refundable once submitted to the state of Alaska). These materials will 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.

Program Requirements

1. Complete the following for secondary licensure:
   EDSC 402—Methods of Teaching in the Secondary School 3
   EDSC 407—Reading Strategies for Secondary Teachers 3
   EDSC 614—Learning, Development and Special Needs Instruction 3
   EDSC 415—Foundations of Modern Educational Practices 3
   EDSC 424—Culturally Responsive Small School Programs for Alaska 3
   EDSC 631—Secondary Instruction and Assessment in the Content Area* (3)
   or EDSC 632—English/Language Arts Secondary Instruction and Assessment* (3)
   or EDSC 633—Mathematics Secondary Instruction and Assessment* (3)
   or EDSC 634—Science Secondary Instruction and Assessment* (3)
   or EDSC 635—Social Studies Secondary Instruction and Assessment* (3) 3*
   EDSC 642—Portfolio Preparation: Integrating Theory and Practice 3
   EDSC 657—Multicultural Education and School—Community Relations 3
   EDSC 658—Classroom Organization and Management 3
   EDSC 471—Secondary Teaching: School Internship I and Seminar 3
   EDSC 472—Secondary Teaching: School Internship II and Seminar 3
   2. Minimum credits required 33

   **Candidates must take the section or course that corresponds with their major teaching content areas.*

M.Ed. Degree

Students may earn an M.Ed. in one of three areas of specialization: Cross-Cultural Education, Curriculum and Instruction, or Language and Literacy. Licensed teachers who wish to add on to their Type A License an endorsement in Bilingual/Multicultural Education, Early Childhood Education, Native Language Education, Reading, or World Language Education, as part of their M.Ed program of study will need to contact the Coordinator of Graduate Programs in the School of Education for specific course requirements.

Admission requirements

Applications will be reviewed on March 1 and October 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 grade point average.
2. One year of satisfactory teaching or administrative experience. Alternative experience may be accepted.

Complete the following application procedures for the UAF Graduate School:

1. Submit a graduate application form to the UAF Office of Admissions.

2. Submit scores on the general Graduate Record Examination if undergraduate GPA is below 3.0.
3. Submit a 4-5 page essay which describes your career goals and educational philosophy, and how those goals and philosophy are relevant to the School of Education's mission and education graduate degree program.
4. Submit official transcripts.
5. Submit 3 letters of reference.

Degree requirements

1. Complete the general university requirements (page 166).
2. Complete the following education department requirements:
   a. Complete at least 30 approved credits for the degree.
   b. At least 24 credits must be completed at the 600-level.
   c. A synthesizing paper, to demonstrate mastery of the student's program of study, is required in lieu of the university comprehensive examination requirement.
3. Complete the following M.Ed. core requirements:
   a. Complete 1 of the following research courses:
      CCS 601—Documenting Indigenous Knowledge Systems 3
      ED 601—Introduction to Applied Social Science Research 3
   b. Complete the following:
      ED/CCS 603—Field Study Research Methods 3
      ED 689—Proseminar in Applied Educational Research* 3
      ED 698—Research topic (3)
      or ED 699—Thesis (3) 3
   c. Complete 1 of the following Cross-Cultural Foundations with Focus on Alaska Context Courses:
      ED/CCS 610—Education and Cultural Processes 3
      ED/CCS 611—Culture, Cognition and Knowledge Acquisition 3
      ED 612—Cultural and Philosophical Foundations of Education 3
      ED 616—Education and Socioeconomic Change 3
      ED 620—Language, Literacy and Learning 3
      ED/LING 621—Cultural Aspects of Language Acquisition 3
      ED 631—Small Schools Curriculum Design 3
4. Complete at least 15 credits of approved electives in consultation with individual student's graduate advisory committee.
5. Minimum credits required 30

** Completion of course satisfies requirement for synthesizing paper.*

M.Ed. Degree—Curriculum and Instruction—Elementary Option

Following completion of the year-long, post-baccalaureate elementary licensure program, students can pursue an M.Ed. degree in Curriculum and Instruction. 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.

Students who have completed an undergraduate general education minor Option A 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.

1. Complete all graduate-level, post-baccalaureate elementary licensure program requirements. (ED 624, 625, 626, 678).
2. Complete the general university requirements (page 166).
3. Complete M.Ed. degree requirements (page 171).
4. Request permission from the candidate's graduate committee to use graduate-level course work.
5. Complete the 12 core credits required for an M.Ed. (see section on M.Ed.).
6. Complete two graduate-level elective courses approved by candidate's graduate committee 6
7. Minimum credits required 30

M.Ed. Degree—Curriculum and Instruction—Secondary Option

Following the completion of the year-long secondary post-baccalaureate licensure program, students can pursue an M.Ed. degree in Curriculum and Instruction if they choose to do so. Fifteen graduate credits from the secondary post-baccalaureate licensure program can be used to meet the M.Ed. degree Curriculum and Instruction requirements. Courses are available through UAF by distance-delivery and on the Fairbanks campus. Students can enroll in courses during summer and academic years. Program requirements must be met within seven years.

1. Complete all graduate-level, post-baccalaureate licensure program requirements.
2. Complete the general university requirements (page 166).
3. Complete M.Ed. degree requirements (page 171).
4. Request permission from the candidate's graduate committee to use graduate-level secondary licensure course work.
5. Complete the 15 core credits required for an M.Ed. degree (see section on M.Ed. degree).
6. Minimum credits required* 30

   **At least 30 credits must be at the 600-level*

Guidance and Counseling M.Ed. degree

Students may earn an M.Ed. degree in guidance and counseling. Refer to the guidance and counseling program section of this catalog for more information.

Master of Education in Language and Literacy with K-12 Reading Endorsement

Program Requirements

1. Complete the admission requirements for the Master of Education degree.
2. Complete the following admission requirements:
   a. Current elementary, secondary or K-12 teaching certificate.
   b. At least one year of teaching experience.
   c. Access to school/class for internship practicum (as demonstrated by letter of support from 1 or more schools).
3. Complete the following course requirements:
   ED 669—Reading, Language and Culture 3
   ED 601—Introduction to Applied Social Science Research 3
   ED 603—Field Study Research Methods 3
   ED 670—Developing Literacy: ECE-12 3
   ED 671—Reading and Cognition 3
   ED 672—Literature and Reading: Supporting Readers at All Levels 3
   ED 673—Content Reading 3
   ED 683—Instruction and Assessment I 3
   ED 684—Instruction and Assessment II 3
   ED 689—Proseminar in Applied Educational Research* 3
   ED 698—Research* 3
3. Minimum credits required 33

   ** ED 689 and ED 698 may be taken at a later time. ED 689 is a prerequisite for ED 698.*

K-12 Reading Endorsement Only

1. Complete the following admission requirements:
   a. Application to the K-12 reading endorsement only program follows the same admissin requirements and procedures as for the M.Ed. in Language and Literacy and Reading.
   b. People who currently hold master's degrees in education may apply.
2. Complete the following K-12 Reading Endorsement courses:
   - ED 669—Reading, Language and Culture 3
   - ED 670—Developing Literacy: ECE-12 3
   - ED 671—Reading and Cognition 3
   - ED 672—Literature and Reading: Supporting Readers at All Levels 3
   - ED 673—Content Reading 3
   - ED 683—Instruction and Assessment I 3
   - ED 684—Instruction and Assessment II 3
   - ED 689—Proseminar in Applied Educational Research* 3
3. Minimum credits required 24

Special Education Endorsement and M.Ed. Degree

The University of Alaska Anchorage's Statewide Special Education Program offers a 24 credit Special Education Endorsement and a 24 credit M.Ed. in General Special Education or Early Childhood Special Education. UAA serves as the academic home base for this program with faculty members located on all three main University of Alaska campuses. Many courses will be offered both by distance delivery and on campus to provide candidates multiple options for meeting the requirements.

Note: Students must complete an application to the Special Education Program. For further information, please contact the UAA Special Education Program in Anchorage or the UA Special Education program coordinator office on the UAF campus.

Note: For descriptions of UAA courses, see current University of Alaska Anchorage catalog.

Type B License

A new UA systemwide Type B License program for those seeking school administrative licensure has been developed as a cooperative effort across the three campuses, with UAA serving as the academic home base for the program. Based on the current Alaska standards for school administrators, the program will include 4 core courses (3 credits each) and an academic year (2 semesters) internship/seminar for an additional 12 credits. The courses will be offered by distance education and on campus according to a rotating schedule (see note below), so as to provide candidates from various circumstances (rural, urban, full-time, part-time) multiple options for meeting the prerequisites and completing different components of the program in an appropriate sequence and a reasonable time frame.

Program Requirements

1. Complete the following Type B requirements:
   - ED F631—Small Schools Curriculum Design (3) or ED A638—Instruction and Curriculum Leadership (UAA) (3) 3
   - ED A637—Educational Leadership and Organizational Behavior (UAA) 3
   - ED A639—Social and Political Foundations of Education (UAA) . 3
   - ED A640—School Law and Ethics (UAA) 3
   - ED A641—Principal Internship (UAA)* 6
   - ED A642—Principal Seminar I (UAA)* 3
   - ED A643—Principal Seminar II (UAA)* 3
2. Minimum credits required 24

** Prerequisites are ED A637 (UAA) and ED A640 (UAA).*

Note: Courses are offered as follows: ED F631 distance education (spring). ED A637 (fall) and summer (odd years). ED A639 distance education (spring) and summer (even years). ED A640 (spring) and summer (odd years). ED A641, A642 and A643 distance education (fall and spring). ED 638 summer (even years).

Note: Students must complete an application for the Type B program to be reviewed by a statewide admissions committee. For further information please contact the UAA Type B program coordinator office on the UAF campus.

Note: For course descriptions of UAA courses, see current University of Alaska Anchorage catalog.

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.

Title II Mandated Annual Report on Teacher Education Programs – April 2003

Praxis I Pass-rate data for students completing UAF Teacher Education programs Spring 2002

Number of program completers: 69

Type of assessment	# taking assess-ment	# passing assess-ment	UAF pass rate	Statewide # taking assess-ment	Statewide # passing assess-ment	Statewide pass rate
Basic Skills						
PPST Reading	39	39	100%	116	116	100%
CBT Reading	30	30	100%	138	138	100%
PPST Writing	37	37	100%	116	116	100%
CBT Writing	32	32	100%	139	138	99%
PPST Mathematics	39	39	100%	119	118	99%
CBT Mathematics	30	30	100%	138	138	100%
CPPST Writing				3		

Aggregate Praxis I Pass-rate Data for students completing spring 2002.

Type of Assessment	# taking assess-ment	# passing assess-ment	UAF pass rate	Statewide # Taking assess-ment	Statewide # passing assess-ment	Statewide pass rate
*Aggregate: Basic Skills**	69	69	100%	261	259	99%
*Summary of Individual Assessments***	69	69	100%	261	259	99%

Total number of teacher preparation students enrolled during 2001-2002: 224

Number of students in programs of supervised student teaching academic year 2001-2002: 97

Total number of supervising faculty during 2001-2002: Seven appointed full-time faculty in professional education; two appointed part-time faculty in professional education and full-time in th einstitutuipn; 11 appointed part-time faculty not otherwisde employed by the institution.

Total number of supervising faculty: 20

The ratio of student teachers/interns to supervising faculty was 4.9

The number of hours per week required of student participation in supervised student teaching in these programs was: 32-40 hours. The total number of weeks of supervised student teaching required is 12-18.The total number of hours required is 480-576 hours. (first number = student teachers; second number = interns)

Information about state approval or accreditation of teacher preparation programs:

• Is the UAF teacher preparation program currently approved or accredited by the state? Yes

• Is the UAF teacher preparation program currently under a designation as "low-performing" by the state (as per section 208 (a) of the HEA of 1998)? No

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Electrical Engineering

College of Science, Engineering and Mathematics
Department of Electrical and Computer Engineering
(907) 474-7137
www.uaf.edu/ece/

M.E.E., M.S. Degrees

Minimum Requirements for Degrees: M.E.E.: 32 credits; M.S.: 30 credits

Students who pursue advanced degrees in electrical and computer engineering work side by side with internationally known faculty in one of the most exciting research locations in the world: Alaska. The M.E.E. degree program, designed for the practicing professional engineer, focuses on a major project. The M.S. degree includes a written thesis and oral defense for those students interested in research and development. UAF offers an engineering Ph.D. program for students with an approved curriculum. Capable students with undergraduate degrees in physics, mathematics or related sciences, as well as in various branches of engineering, may also be admitted for graduate study. A student with adequate background can usually complete M.S. requirements within two academic years and a Ph.D. in another three academic years.

Graduate degree programs in electrical and computer engineering are closely connected with research activities of the faculty. The main areas of research include communications, radar, lidar, and sonar remote sensing, instrumentation and microwave circuit design, electric power and energy systems, digital and computer engineering, nanotechnology, controls and robotics. Current research topics include high latitude satellite communications, rocket telemetry, radiowave propagation, ultrawideband wireless communications, electromagnetic and acoustic wave propagation, remote biomedical and environmental instrumentation, microwave design, digital signal processing, digital and physical electronics, computer applications, remote hybrid electric power systems, electric power system design and analyses, electric power quality improvement, system identification, simulation, computer-controlled systems, control theory, robotics and automation.

A number of on- and off-campus research facilities are available to students. Satellite, rocket and ground-based communication studies are carried out both on campus and at Poker Flat Research Range. The Sounding Rocket Laboratory provides opportunities for developing instrumentation for sounding rocket payloads launched from Poker Flat Research Range—the only university-operated rocket range in the world. The Arctic Region Supercomputing Center on campus provides a wide variety of tools for digital system research. The department also has a variety of research laboratories available, including Microwave, Wireless Communications, Ultrawideband Technology, Waves, Power Electronics/Robotics, Instrumentation, and Digital laboratories.

Alaska's environment and remote location provide unique opportunities for research in a variety of areas, such as the use of acoustic, light and radio wave techniques for measuring fish in Alaskan rivers to the geophysical properties of the aurora. Remote sensing for biomedical (animal tracking) and environmental (ground water and air monitoring) applications is an important research area for Alaska. Electric power systems research includes issues related to isolated rural Alaskan communities, analysis of larger interconnected generation, transmission and distribution systems serving major Alaskan population centers, and the use of alternative energy systems.

Graduate students in electrical and computer engineering at UAF receive the highest quality, contemporary educations available at the graduate level and perform research appropriate to the technical needs of the state of Alaska, the nation and the world.

Graduate Program—M.E.E. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete 1 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 remove background deficiencies with their graduate committee.
3. Complete the general university requirements (page 166).
4. Complete the master's degree requirements (page 170).
5. Complete 32 credits.*
6. Minimum credits required.....32

** At least 26 credits must be at the 600-level. A research project is not required, although up to 6 credit hours of research may be completed as part of the degree program. If a research project is part of the degree program, an oral project presentation and defense is required.*

Graduate Program—M.S. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete 1 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 remove background deficiencies with their graduate committee.
3. Complete the general university requirements (page 166).
4. Complete the master's degree requirements (page 170).
5. Minimum credits required.....30
   See Engineering for Ph.D. program.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Engineer of Mines

School of Mineral Engineering
Department of Mining and Geological Engineering
(907) 474-7388
www.uaf.edu/sme/MinEng.html

E.M. Degree

Minimum Requirements for Degree: 30-36 credits

The engineer of mines degree is a professional degree awarded to UAF engineering graduates who have a minimum of five years of responsible engineering experience.

Graduate Program—E.M. Degree

1. Complete the following admission requirements:
   a. Complete a UAF School of Mineral Engineering degree.
   b. Complete a resume of engineering work experience and synopsis of proposed thesis topic.
2. Complete the general university requirements (page 166).
3. Complete the engineer of mines degree requirements. For specific degree requirements, contact the School of Mineral Engineering.*
4. Complete a thesis.**
5. Minimum credits required 30-36

** Class work beyond the initial degree is not required, but may be recommended.*

*** Registration at UAF during the semester of the thesis submittal is required.*

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Engineering

College of Science, Engineering and Mathematics
(907) 474-7241
www.uaf.edu/csem/

Ph.D. Degree

Minimum Requirements for Degree: 36 credits

Engineers use knowledge of the mathematical and natural sciences to develop economical uses of the 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 Science, Engineering and Mathematics and offers opportunities for engineers at other UA campuses to participate. Doctoral research will usually focus on one of these engineering areas: arctic, civil, electrical, engineering management, environmental or mechanical.

Graduate Program—Ph.D. Degree

Concentrations: Arctic, Civil, Electrical, Engineering Management, Environmental, Mechanical

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 166).
3. Complete the Ph.D. degree requirements (page 169).
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 and pass a written and oral comprehensive examination.
   c. Complete and submit a written thesis proposal for approval.
   d. Complete a research program as arranged with the graduate advisory committee.
   e. Complete a thesis that is substantial contribution to the body of knowledge in engineering and pass an oral defense of thesis.
5. Minimum credits required.....36

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Engineering Management

College of Science, Engineering and Mathematics
Department of Civil and Environmental Engineering
(907) 474-6121
www.uaf.edu/civileng/cee.html

M.S. Degree

Minimum Requirements for Degree: 30 credits

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

Graduate Program—M.S. Degree

1. Complete the following admission requirements and recommendations:
   a. Complete a bachelor's degree in an engineering discipline.
   b. On-the-job experience in engineering is recommended.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
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 engieneering management subject areas as follows:
   a. Human Element (2 courses required)
      ESM 601—Engineers in Organizations 3
      BA 607—Human Resources Management 3
   b. Project Management (2 courses required)
      ESM 609—Project Management (3)
      ESM 608—Legal Principles for Engineering Management (3)
      CE 620—Civil Engineering Construction (3) 6
   c. Quantitative Methods (1 course required)
      ESM 622—Engineering Decisions (3)
      or ESM 620—Statistics for ESM (3)
      or ESM 621—Operations Research (3) 3
   d. Financial (2 courses required)
      ACCT 602—Accounting for Managers 3
      ESM 605—Engineering Economic Analysis* 3
6. Complete the following:
   ESM 684—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 Science Management.
See Environmental Engineering and Environmental Quality Science.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

English

College of Liberal Arts
Department of English
(907) 474-7193
www.uaf.edu/english/

M.A., M.F.A. Degrees

Minimum Requirements for Degrees: M.A.: 30-36 credits; M.F.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 and a three-year M.F.A. degree in creative writing. Teaching assistantships are available for both programs. The M.A. degree offers advanced study of literature and literary theory, as preparation for teaching or for entering a Ph.D. program. The M.F.A. degree is a terminal degree, culminating in the production of a publication-quality thesis manuscript of poetry, fiction, drama or creative non-fiction.

Graduate Program—M.A. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
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 601—Bibliography, Methods, and Criticism 3
   ENGL 685—Teaching College Composition (3)*
   or ENGL 600-level elective course (3) 3
b. Complete the following:
   ENGL 699—Thesis 6
   ENGL electives** 18
c. Complete 3 of the following electives:
   ENGL 603—Studies in British Literature: Old and Middle English 3
   ENGL 604—Studies in British Literature: Renaissance and 17th Century 3
   ENGL 606—Studies in British Literature: Restoration and 18th Century 3
   ENGL 607—Studies in British Literature: 19th Century 3
d. Complete 1 of the following electives:
   ENGL 609—Early American Literature 3
   ENGL 611—Nineteenth Century American Literature 3
   ENGL 612—Modern American Literature 3
e. Complete 1 of the following electives:
   ENGL 608—Studies in British Literature after 1900 3
   ENGL 614—Studies in Comparative Literature 3
   ENGL 615—Contemporary Literature 3
f. Pass an oral defense of the thesis.
g. Minimum credits required 30

Non-Thesis

a. Complete the following:
   Complete required courses and distribution of electives in a, c, d and e in the thesis option. 21
   Complete additional approved ENGL 600-level electives 9
   Complete ENGL 698—Research (maximum) 6
   Complete a research paper which the advisory committee judges to be of publishable quality.
   Pass an oral defense of the project
b. Minimum credits required 36

** Recommended if you are a teaching assistant or planning to teach.*

*** To maximize breadth of study, M.A. students and their advisors will draft individualized courses of study with the following program requirements in mind. The advisor will direct students to courses covering the required areas, subject to particular exemptions based upon undergraduate course work. Exemptions and any subsequent revisions of the course of study must have the agreement of the advisor and department head. Plans can be revised to substitute an appropriate seminar for one of the courses.*

Note: Students may apply up to 3 credit hours of independent study toward the English M.A. degree requirements.

Graduate Program—Creative Writing, M.F.A. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete and pass a written comprehensive examination, based on a standardized reading list; examination to be taken no later than student's fourth semester of work. Examination will be held on the Saturday ending the fourth full week of classes in the spring semester.
5. Students may advance to candidacy when their advisory committee deems that they have made satisfactory progress in both academic and writing areas.
6. Complete the following:
   ENGL 601—Bibliography, Methods, and Criticism 3
   ENGL 671—Writers' Workshop 9
   ENGL 685—Teaching College Composition (3)*
   or ENGL elective course 600-level (3) 3
   ENGL 699—Thesis 6
   ENGL approved electives 6
   Literature seminars** 12
7. Complete 2 of the following:
   ENGL 681—Forms of Poetry 3
   ENGL 682—Forms of Fiction 3
   ENGL 683—Forms of Drama 3
   ENGL 684—Forms of Non-Fiction Prose 3
8. Minimum credits required 45

** Recommended if you are a teaching assistant or planning to teach.*

*** Minimum of 4 to be determined by student's advisory committee.*

Note: Students may apply up to 6 credit hours of independent study toward the English M.F.A. degree requirements. Note: The English department requires that a student receive an A or B grade for all 600-level courses that the student wishes to apply toward the master's degree programs.

UNIVERSITY OF ALASKA FAIRBANKS
Office of Admissions and the Registrar • P.O. Box 757480 • Fairbanks, AK 99775-7480 • admissions@uaf.edu • www.uaf.edu

Environmental Chemistry

College of Science, Engineering and Mathematics
Department of Chemistry and Biochemistry
(907) 474-5510
www.uaf.edu/chem/

M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits;
Ph.D.: 18 thesis credits

Alaska is a great laboratory for environmental chemistry. The environment in the Arctic is continuing to change and impacts of global systems are first felt in Alaska. Our understanding of the underlying mechanisms of the transport of contaminants is far from complete, and solutions to this and other fascinating environmental problems beckon researchers to the Arctic.

The environmental chemistry program emphasizes an understanding of the chemical principles involved in natural processes. The program provides academic and research experience for graduate students who are interested in careers in this growing scientific discipline. The program utilizes faculty from many UAF departments and research institutes.

The environmental chemistry program may be especially attractive to students interested in working with policy makers. Environmental problems currently under study include the transport of gases such as NO_2 and O_3 related to arctic haze, indoor air pollution, health effect biomarkers, understanding the sources of particulate matter and mobility of metals in aquatic systems.

Graduate Program—M.S. Degree

1. Complete the general university requirements (page 166).
2. Complete the master's degree requirements (page 170).
3. Complete a thesis.
4. Minimum credits required.....30

Graduate Program—Ph.D. Degree

1. Complete the general university requirements (page 166).
2. Complete the Ph.D. degree requirements (page 169).
3. Complete program courses.
4. Complete 4 electives.
5. Minimum credits required.....18

See Biochemistry and Molecular Biology.
See Chemistry.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Environmental Engineering and Environmental Quality Science

College of Science, Engineering and Mathematics
Department of Civil and Environmental Engineering
(907) 474-6129
www.uaf.edu/civileng/cee.html

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.

Graduate Program—Environmental Engineering, M.S. Degree

1. Complete the following admission requirements:
   a. Complete the equivalent of a UAF course in basic computer techniques.
   b. Complete the TOEFL exam (only non-native English speakers, minimum score 575 for the paper test, or 213 for the computerized test).
   c. Complete a B.S. in engineering from an ABET accredited institution (GPA of 3.0 or higher).
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete the thesis or non-thesis requirements for one of the environmental engineering and environmental quality science concentration areas listed below:

Graduate Program—Environmental Quality Science, M.S. Degree

1. Complete the following admission requirements:
   a. Complete the equivalent of 1 year of UAF courses in calculus and general chemistry, and 1 semester of computer techniques.
   b. Complete the TOEFL exam (only non-native English speakers, minimum score 575 for the paper test, or 213 for the computerized test).
   c. Complete a B.S. in science from an accredited institution (GPA of 3.0 or higher).
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete the thesis or non-thesis requirements for one of the Environmental Engineering and Environmental Quality Science concentration areas listed below:

Concentrations for Environmental Engineering and Environmental Quality Science: Environmental Contaminants, Environmental Science and Management, Water Supply and Waste Treatment

Environmental Contaminants

a. Complete the following
- CS 663—Groundwater Dynamics 3
- ENVE 641—Aquatic Chemistry 3
- ENVE 642—Contaminant Hydrology 3
- ENVE 647—Biotechnology 3
- ENVE 649—Hazardous and Toxic Waste Management 3
- ENVE 650—Seminar* (1) 2
- ENVE 653—Measurements Laboratory 1
- ENVE 698—Project 3
  - or ENVE 669—Thesis 6
- Approved electives** 6-9

b. Minimum credits required 30

** Complete 2 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 642, 680, 682, 685; and CE 603, 661, 683, 684; and CHEM 631, 655; and ENVE 658; and GE 620; and MATH 608, 615.

Environmental Science and Management

a. Complete 5 of the following courses
- ENVE 641—Aquatic Chemistry 3
- ENVE 644—Environmental Management and Law 3
- ENVE 647—Biotechnology 3
- ENVE 649—Hazardous and Toxic Waste Management 3
- ENVE 651—Environmental Risk Management 3
- ENVE 652—Toxicology for Engineers and Scientists 3

b. Complete the following
- ENVE 650—Seminar* (1) 2
- ENVE 653—Measurements Laboratory 1
- ENVE 698—Project 3
  - or ENVE 669—Thesis 6
- Approved electives** 6-9

c. Minimum credits required 30

** Complete 2 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 663, ENVE 642, 643, 645, 646 and 648.*

Note: In addition to the courses listed in any of the concentration areas, electives include but are not limited to: BIOL 642, 680, 682, 685; and CE 603, 661, 683, 684; and CHEM 631, 655; and ENVE 658; and GE 620; and MATH 608, 615.

Water Supply and Waste Treatment

a. Complete the following
- ENVE 641—Aquatic Chemistry....3
- ENVE 645—Unit Processes—Chemical and Physical....3
- ENVE 646—Unit Processes—Biological....3
- ENVE 647—Biotechnology....3
- ENVE 650—Seminar* (1)....2
- ENVE 653—Measurements Laboratory....1
- ENVE 698—Project....3
  - or ENVE 669—Thesis....6
- Approved electives**....6-9

b. Complete one of the following
- ENVE 643—Air Pollution Management....3
- ENVE 648—Solid Waste Management....3
- ENVE 649—Hazardous and Toxic Waste Management....3

c. Minimum credits required....30

** Complete 2 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 642, 680, 682, 685; and CE 603, 661, 683, 684; and CHEM 631, 655; and ENVE 658; and GE 620; and MATH 608, 615.

See Arctic Engineering.
See Civil Engineering.
See Engineering for Ph.D. program.
See Engineering Management.
See Science Management.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

UNIVERSITY OF ALASKA FAIRBANKS
Office of Admissions and the Registrar • P.O. Box 757480 • Fairbanks, AK 99775-7480 • admissions@uaf.edu • www.uaf.edu

Fisheries

School of Fisheries and Ocean Sciences
Program in Fisheries
(907) 474-7289
www.sfos.uaf.edu/fishdiv/acad/degrees.html

M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits;
Ph.D.: 18 thesis credits

Graduate degree program students attend classes and work with faculty in Juneau and/or Fairbanks. Academic programs can be developed in one of the following subject areas: fisheries management (Juneau and Fairbanks), fish/invertebrate biology (Juneau and Fairbanks) and aquaculture (Juneau). Research assistantships are available. Applicants should contact the fisheries program for further information and application forms.

Fairbanks' geographic location is advantageous for the study of interior Alaska aquatic habitats. A number of subarctic streams and lakes are within easy reach. Main access to the marine environment from the Fairbanks campus is in Prince William Sound and Cook Inlet.

The Juneau Center, School of Fisheries and Ocean Sciences, houses the UAF fisheries science program in southeast Alaska. The Juneau Center has well-equipped labs, including freshwater and seawater wet labs and computer labs. There is ready access to both marine and freshwater habitats. The Juneau Center is located near the Auke Bay National Marine Fisheries Service Laboratory north of Juneau. The Fishery Industrial Technology Center is located in Kodiak. It has new facilities for work in harvest technology, seafood technology, seafood biochemistry and microbiology.

Fisheries students in Fairbanks and Juneau have an opportunity to associate with personnel of federal and state conservation agencies and these agencies hire students for summer field work.

Graduate Program—M.S. Degree

1. Complete the following admission requirements:
   a. Prerequisites: calculus, elementary statistics, ichthyology or invertebrate zoology and computer competency.
   b. Submit GRE scores.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete the following:
   FISH 699—Thesis 6-12
   STAT 401—Regression and Analysis of Variance 4
   Electives.....12-18
   Graduate seminars.....2
5. Minimum credits required.....30

   Note: Students working in subject areas involving significant non-English literature may be expected to read the appropriate foreign language.

Graduate Program—Ph.D. Degree

1. Complete the following admission requirement:
   a. Complete a master's degree in a fisheries-related field.
   b. Submit GRE scores.
2. Complete the general university requirements (page 166).
3. Complete the Ph.D. degree requirements (page 169).
4. Complete at least 1 year of full-time course work, as approved by the student's advisory committee.
5. Complete a thesis.
6. Minimum credits required 18

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

General Science

College of Science, Engineering and Mathematics
Department of Physics
(907) 474-6108
www.uaf.edu/physics/

M.S. Degree

Minimum Requirements for Degree: 30 credits

The general science program offers M.S. degrees in the biological sciences, chemistry, the geosciences and physics. The M.S. degree may be described as a breadth degree, rather than a depth degree, so a candidate normally pursues a course of study in one of these disciplines and is cooperating with at least one other discipline.

Graduate Program—M.S. Degree

1. Complete the following admissions requirement:
   a. Complete a baccalaureate degree with a 3.0 GPA.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. At least 21 credits must be earned in science and mathematics. At least 12 credits must be earned in the major discipline selected. A thesis (maximum of 3 or project (no credit) must be completed in the major discipline. It is not intended that the individual courses comprising the program merely satisfy the credit requirements; each course should contribute to the specific aim of the candidate, and the thesis or project should reflect this aim.
5. Minimum credits required.....30
   See Physics, Applied.
   See Physics, Computational.
   See Physics.
   See Space Physics.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Geological Engineering

School of Mineral Engineering
Department of Mining and Geological Engineering
(907) 474-7388
www.uaf.edu/sme/GeolEng.html

M.S. Degree

Minimum Requirements for Degree: 30-33 credits

Geological engineering deals with the application of geology. Geological engineers work with the environment in the true sense of the word. Properties of earth materials exploration activities, geophysical and geochemical prospecting, site investigations and engineering geology are all phases of geological engineering.

The graduate program prepares students for employment with industry, consulting companies and government agencies.

Graduate Program—M.S. Degree

1. Complete a comprehensive entrance exam.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete the thesis or non-thesis requirements:

Thesis

a. Complete the following:
- GE 635—Geostatistical Ore Reserve Estimation (3) or MIN 621—Advanced Mineral Economics (3) 3
- GE 620—Advanced Groundwater Hydrology 3
- GE 630—Advanced Applied Mining Geology 3
- GE 666—Advanced Engineering Geology 3
- Geological engineering courses and technical electives 12
- GE 699—Thesis 6

b. Minimum credits required 30

Non-Thesis

a. Complete the following:
- GE 635—Geostatistical Ore Reserve Estimation (3) or MIN 621—Advanced Mineral Economics (3) 3
- GE 620—Advanced Groundwater Hydrology 3
- GE 630—Advanced Applied Mining Geology 3
- GE 666—Advanced Engineering Geology 3
- Geological engineering courses and technical electives 15
- GE 698—Research/Project 6

b. Minimum credits required 33

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Geology

College of Science, Engineering and Mathematics
Department of Geology and Geophysics
(907) 474-7565
www.uaf.edu/geology/

M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits; Ph.D.: 18 thesis credits

Graduates in geology have broad backgrounds in the earth sciences and firm foundations in mathematics, physics and chemistry. There are many concentrations available in the geological sciences, and the suggested curricula are intended to be flexible enough to allow students to pursue their own emphasis. The M.S. program is tailored to the special research and study interest of the student.

There are about 40 professional geoscientists in residence on campus and graduate students normally participate in the ongoing research of these professionals. Teaching and research assistantships are available to graduate students in many of these areas.

Graduate Program—M.S. Degree

Concentrations: Economic Geology; General Geology; Petroleum Geology; Quaternary Geology; Remote Sensing; and Volcanology

1. Complete the following admission requirements:
   a. Submit GRE scores.
   b. Complete a background at least to the level of a B.S. concentration in geology, geophysics or earth science.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
   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 1 of the following concentrations:

Economic Geology
   a. Complete GEOS 675, 618 or equivalent; GEOS 418 or equivalent; 9 credits in applied geoscience; and at least 1 course in mineral economics or engineering management, as approved by the graduate advisory committee.
   b. Minimum credits required.....30

General Geology
   a. Complete 12 credits at the 600-level as approved by the graduate advisory committee.
   b. Minimum credits required.....30

Petroleum Geology
   a. Complete 12 credits of course work at the 600-level from courses in the following disciplines: structural geology, stratigraphy, sedimentology, geophysics, and/or petroleum engineering, as approved by the graduate advisory committee.
   b. Minimum credits required.....30

Quaternary Geology
   a. Complete 9 credits in Quaternary geology and at least 1 course in another area of Quaternary studies, as approved by the graduate advisory committee.
   b. Minimum credits required.....30

Remote Sensing
   a. Complete GEOS 623 and 10 credits in remote sensing-related courses, as approved by the graduate advisory committee.
   b. Minimum credits required.....30

Volcanology
   a. Complete 12 credits at the 600-level in volcanology-related courses, as approved by the graduate advisory committee.
   b. Minimum credits required.....30

Graduate Program—Ph.D. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete the general university requirements (page 166).
3. Complete the course work requirements for the appropriate M.S. concentration.
4. Complete the Ph.D. degree requirements (page 169).
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 School of Mineral Engineering 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.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Geophysics

College of Science, Engineering and Mathematics
Department of Geology and Geophysics
(907) 474-7565
www.uaf.edu/geology/

M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits; Ph.D.: 18 thesis credits

Graduate Program—M.S. Degree

Concentrations: Solid-Earth Geophysics; Snow, Ice and Permafrost Geophysics; Remote Sensing Geophysics

1. Complete the following admission requirements:
   a. Submit GRE scores.
   b. Complete a background at least to the level of a B.S. concentration in geology, geophysics or an appropriate physical science or engineering.
   c. Complete MATH 421 and 422; or equivalent.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
   a. Complete 6-12 thesis credits.
   b. Complete any deficiencies concurrently with this degree.
4. Submit a written thesis proposal and pass an oral comprehensive examination centered on this proposal.
5. Complete and submit a written thesis and pass an oral defense of thesis.
6. Complete 6 credits of the following geophysics core requirements:
   GEOS 602—Geophysical Fields....3
   GEOS 620—Geodynamics....3
   GEOS 623—Advanced Remote Sensing....3
7. Complete 1 of the following concentrations:

Solid-Earth Geophysics

a. Complete 6 credits from the following:
   GEOS 604—Intermediate Seismology....3
   GEOS 605—Geochronology....3
   GEOS 613—Global Tectonics....3
   GEOS 671—Volcano Seismology....3
b. Minimum credits required....30

Snow, Ice and Permafrost Geophysics

a. Complete 6 credits from the following:
   GEOS 614—Ice Physics....3
   GEOS 615—Sea Ice....3
   GEOS 616—Permafrost....3
   GEOS 617—Glaciers....3
b. Minimum credits required....30

Remote Sensing Geophysics

a. Complete 6 credits from relevant remote sensing, geophysics or physics courses as agreed on by the advisory committee.
b. Minimum credits required....30

Graduate Program—Ph.D. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete the general university requirements (page 166).
3. Complete the course work requirements for the appropriate M.S. concentration.
4. Complete the Ph.D. degree requirements (page 169).
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: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Guidance and Counseling

School of Education
(907) 474-7341
www.uaf.edu/educ/graduate/guidance.html

M.Ed. Degree

Minimum Requirements for Degree: 48 credits

The primary purpose of this program is to prepare counselors at the graduate level with specific training in the areas of counseling and consultation for education, social and career decisions. Completion of this program meets requirements for Alaska licensure as a school counselor. In addition, this program may also serve as a basis for pursuing additional requirements necessary for licensure as a professional counselor (i.e., mental health).

The program emphasizes a developmental perspective, focusing on issues pertinent to providing guidance and counseling services, consultation and program development in multicultural settings.

Graduate Program—M.Ed. Degree

1. Complete the following admission requirements:
   a. 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 guidance and counseling faculty.
   b. The following criteria are considered: clarity of goals appropriate to those of the program and commitment to working in multicultural settings.
   c. Applicants must have a GPA of 3.0 or higher in their undergraduate major.
   d. In addition to the admission requirements of the master's degree program, the student must apply for admission to and be accepted by the program area faculty.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete practicum and internship placements in a setting appropriate to the student's program focus.
5. Complete the following course requirements:
   COUN 615—Foundations of Guidance and Counseling.....3
   COUN 623—Counseling Theories and Applications I.....3
   COUN 628—Child and Adolescent Psychology.....3
   COUN 629—Developmental Interventions.....3
   COUN 632—Career Development.....3
   COUN 630—Appraisal for School Counselors.....3
   COUN 634—Practicum in Individual Counseling.....3
   COUN 636—Practicum in School or Community Counseling*+ ..3
   COUN 646—School Counseling.....3
   COUN 647—Professional Ethics.....3
   COUN 660—Cross-Cultural Counseling.....3
   COUN 674—Group Counseling.....3
   COUN 690—Internship**+.....3-9
   COUN 698—Research Project (3-6)
   or COUN 699—Thesis (6).....3-6
   ED 601—Introduction to Applied Social Science Research.....3
   Elective credits.....3
6. Minimum credits required.....48

**Students will register for one section of practicum either in Elementary, Secondary or Community counseling*

***K-12 certification requires both elementary and secondary internship*

+ Students pursuing certification in school counseling must complete a Practicum and Inernship in a school setting.

Note: Courses assigned by the student's graduate committee to remove deficiencies will not be allowed as part of the graduate program.

Licensure Only

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 guidance and 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 guidance and counseling faculty) may apply.
2. Complete the following certification requirements:
   COUN 615—Foundations of Guidance and Counseling.....3
   COUN 623—Counseling Theories and Applications I.....3
   COUN 628—Child and Adolescent Psychology.....3
   COUN 629—Developmental Interventions (3)*
   or COUN 632—Career Development (3)**.....3
   COUN 630—Appraisal for School Counselors.....3
   COUN 634—Practicum in Individual Counseling.....3
   COUN 636—Practicum in School or Community Counseling.....3
   COUN 646—School Counseling.....3
   COUN 647—Professional Ethics.....3
   COUN 660—Cross-Cultural Counseling.....3
   COUN 674—Group Counseling.....3
   COUN 690—Internship.....3-9
3. Minimum credits required.....36

** Required for elementary and K-12 certification.*

*** Required for secondary and K-12 certification.*

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Interdisciplinary Studies

(907) 474-7464
www.uaf.edu/gradsch/

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 with well-defined goals who do not fit into one of the established majors offered by the university.

Graduate Program—M.A. or M.S. degree

1. Complete the admission process including the following:
   a. Submit GRE scores
   b. In consultation with a UAF faculty member: prepare and submit a statement of research goals and justification for interdisciplinary approach, and a preliminary graduate study plan.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Pass a comprehensive examination.
5. Minimum credits required.....30

Graduate Program—Ph.D. degree

1. Complete the admission process including the following:
   a. Submit GRE scores
   b. In consultation with a UAF faculty member: prepare and submit a statement of research goals and justification for interdisciplinary approach, and a preliminary graduate study plan.
2. Complete the general university requirements (page 166).
3. Complete the Ph.D. degree requirements (page 169).
4. Pass written and oral comprehensive exams.
5. Minimum credits required.....18

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Justice, Administration of

College of Liberal Arts
Justice Program
(907) 474-5500
www.uaf.edu/justice/

M.A. Degree

Minimum Requirements for Degree: 30 credits

The justice discipline represents a melding of theoretical and applied concepts, and the M.A. degree in administration of justice reflects that dichotomy. Consequently, students explore theoretical models associated with different aspects of the criminal justice system, but also study the structure and administration of the criminal justice system.

The M.A. degree in administration of justice has been designed as a web-based degree program in order to accommodate the needs of justice professionals for whom taking a two-year leave of absence from their profession is not feasible, or for whom relocating to the Fairbanks vicinity is not possible. The M.A. degree program is the university's first web-based program and has attracted justice professionals throughout the country who have found the flexibility of a web-based format necessary for their lifestyles.

Graduate Program—M.A. Degree

1. Complete the general university requirements (page 166).
2. Complete the master's degree requirements (page 170).
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 690.
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 605—Administration and Management of Criminal Justice Organizations 3
   - JUST 615—Justice Program Planning/Evaluation and Grant Writing 3
   - JUST 620—Personnel Management in Criminal Justice 3
   - JUST 625—Legal Aspects of Criminal Justice Management 3
   - JUST 640—Community/Restorative Justice 3
   - JUST 690—Seminar in Critical Issues and Criminal Justice Policy 3
   - JUST 698/699—Master's Project or Thesis 6
8. Complete 6 credits from the following:
   - JUST 610—Ethics in Criminal Justice Management 3
   - JUST 630—Media and Community Relations for Criminal Justice Administrators 3
   - JUST 650—Analysis Techniques for the Criminal Justice Administrator 3
   - JUST 670—Seminar in the Administration of Juvenile Justice 3
9. Minimum credits required 30

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Linguistics, Applied

College of Liberal Arts
Linguistics Program
(907) 474-6884
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 from theories of grammar and how we produce language to applications of linguistic knowledge in areas such as language teaching.

The M.A. degree in applied linguistics focuses on language teaching and materials development, and/or documentation of underdocumented languages. For students who intend to teach Alaska Native languages, English as a second language or foreign languages, it is designed to provide theoretical and practical foundations in second language acquisition and pedagogy, as well as grammatical explication. For students who intend to work in language documentation, it is designed to provide practical foundations in general linguistics, applications to Alaska Native languages, and techniques of fieldwork and documentation. 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.

Graduate Program—M.A. Degree

1. Complete the general university requirements (page 166).
2. Complete the master's degree requirements (page 170).
3. Complete the following core courses:
   LING 601—Principles of Linguistic Analysis* 3
   LING 602—Second Language Acquisition (3)
   or equivalent (3) 3
   LING 603—Phonetics and Phonology 3
   LING 604—Morphology and Syntax 3
   LING 610—Theory and Methods of Second Language Teaching (3)
   or equivalent (3) 3
   LING 652—Linguistic Applications 3
   LING 660—Internship 3
   Complete elective credits at the 600-level.** 6-9
4. Complete one of the following:
   LING 698—Applied Language Project (6)
   or LING 699—Thesis (6) 6
5. Minimum credits required 30

** Or equivalent, e.g., ANL 452 or undergraduate core courses in LING.*

*** Up to 6 credits may be at the 400-level with approval from the graduate committee. Courses may be chosen from the following: ANTH 631, 632, 670, ANL 401, 402, 601, ED 620, ED/LING 621, ENGL 462, 472, 661, 685, 686, LING 420, 630, 650, or 400-level foreign language course.*

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Marine Biology

School of Fisheries and Ocean Sciences
Graduate Program in Marine Sciences and Limnology
(907) 474-7289
www.sfos.uaf.edu:8000/academics/gpmsl/

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 at Fairbanks, the Seward Marine Center, the Juneau Center, School of Fisheries and Ocean Sciences, the Fishery Industrial Technology Center at Kodiak and at the Kasitsna Bay Laboratory. Opportunities for field work are available on the R/V *Alpha Helix*, which operates along the Alaskan Coast and in the Bering Sea, and on the R/V *Little Dipper*, which operates in Resurrection Bay.

Students may select courses offered by the graduate program in marine sciences and limnology, the fisheries program, the biology and wildlife department and the chemistry and biochemistry department.

Students considering graduate study in marine biology should have a strong background in biology, molecular biology or biochemistry. Students are admitted on the basis of their ability and the capability of the program to meet their particular interests and needs. Faculty review requests for admission throughout the year. Stipends for financial support are awarded competitively. Limited fellowship support is available. Most students are supported on research projects that relate directly to their degree research.

Graduate Program—M.S. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete a thesis.
5. Complete the following:
   MSL 610—Marine Biology 3
   MSL 615—Physiology of Marine Organisms 3
   MSL 650—Biological Oceanography 3
   MSL 651—Marine Biology and Ecology Field Course (4)
   or MSL 611—Field Problems in Marine Biology (5)
   or an equivalent field course at another institution 4-5
   MSL 692—Seminar 3
6. Minimum credits required 30

Graduate Program—Ph.D. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete the general university requirements (page 166).
3. Complete the Ph.D. degree requirements (page 169).
4. Complete course work at least equivalent to that required for the M.S. degree.
5. Minimum credits required 18

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Mathematics

College of Science, Engineering and Mathematics
Department of Mathematical Sciences
(907) 474-7332
www.cs.uaf.edu

M.A.T., M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.A.T.: 36 credits; M.S.: 30-35 credits; Ph.D.: 18 thesis credits

The number of new fields in which professional mathematicians find employment grows continually. This department prepares students for careers in industry, government and education.

The M.S. in mathematics prepares students for Ph.D. work, in addition to providing a terminal degree for those planning to enter industry or education. The M.A.T. degree prepares graduates to teach secondary school mathematics. The aim of the Ph.D. program is to provide the student with the expertise to accomplish significant research in applied or pure mathematics, as well as to provide a broad and deep professional education.

In addition to the major programs, the department provides a number of service courses in support of other programs within the university. Current and detailed information on mathematics degrees and course offerings is available from the department.

The department maintains a math lab for all students studying mathematics at the baccalaureate level.

The Department of Mathematical Sciences also offers programs in computer science and statistics (see separate listings).

Graduate Program—M.A.T. Degree

1. Complete the following admission requirements:
   a. The department does not require any GRE, but recommends applicants provide GRE general scores.
   b. Complete and submit a TOEFL score of at least 600 (this requirement is only for foreign applicants who seek a teaching assistantship).
   c. The department gives preference to foreign applicants who also submit results of the Test of Spoken English (TSE).
2. Complete the general university requirements (page 166).
3. Complete the M.A.T. degree requirements (page 171).
4. Complete the following:
   MATH courses* 18

   Research
5. Minimum credits required 36

   ** At least 12 credits must be at the 600-level.*

Graduate Program—M.S. Degree

1. Complete the following admission requirements:
   a. The department does not require any GRE, but recommends applicants provide GRE general scores.
   b. Complete and submit a TOEFL score of at least 600 (this requirement is only for foreign applicants who seek a teaching assistantship).
   c. The department gives preference to foreign applicants who also submit results of the Test of Spoken English (TSE).
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete mathematics courses and electives.
5. Complete a project or thesis.
6. Minimum credits required 30-35

Graduate Program—Ph.D. Degree

1. Complete the following admission requirements:
   a. The department does not require any GRE, but recommends applicants provide GRE general scores.
   b. Complete and submit a TOEFL. (For teaching assistantship consideration, foreign applicants whose native language is not English. Score of at least 600.)
   c. The department gives preference to applicants who also submit results of the Test of Spoken English (TSE).
2. Complete the general university requirements (page 166).
3. Complete the Ph.D. degree requirements (page 169).
4. Minimum credits required 18

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Mechanical Engineering

College of Science, Engineering and Mathematics
Department of Mechanical Engineering
(907) 474-7136
www.uaf.edu/mechengr/

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; to maintain, as a base, ABET accreditation of the undergraduate program; provide continuing educational opportunities for graduate engineers; serve as a resource of technical knowledge for the state as well as the nation; conduct research in all areas of mechanical engineering including cold regions mechanical engineering; and offer a graduate program in mechanical engineering at the M.S. and Ph.D. levels..

The educational objectives of the department are that graduates from the mechanical engineering program must: be able to apply the knowledge of mathematics, science and engineering; be able to design and conduct experiments, as well as to analyze and interpret data; be able to design a system, component, or process to meet desired needs; be able to function on multi-interdisciplinary teams; be able to identify, formulate and solve engineering problems; understand professional and ethical responsibility; be able to communicate effectively; have the broad education necessary to understand the impact of engineering solutions in a global and societal context; recognize the need for, and be able to engage in, life-long learning; understand contemporary issues; and be able to use the techniques, skills and modern engineering tools necessary for engineering practice. The department ensures that each course in the curriculum plays a meaningful role in satisfying one or more of these objectives.

Graduate Program—M.S. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete the general university requirements (page 166).
3. Complete the M.S. degree requirements (page 171).
4. Complete the following:
   ME 631—Advanced Mechanics of Materials....3
   ME 634—Advanced Materials Engineering....3
   ME 641—Advanced Fluid Mechanics....3
   ME 642—Advanced Heat Transfer....3
   ME 608—Advanced Dynamics....3
5. Complete the thesis or non-thesis requirements:

Thesis

a. Complete the following:
   ME 699—Thesis....6
   Electives*....9
b. Minimum credits required....30

Non-Thesis

a. Complete the following:
   Electives*....12
   ME 698—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.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Mineral Preparation Engineering

School of Mineral Engineering
Department of Mining and Geological Engineering
(907) 474-7388
www.uaf.edu/sme/GeolEng.html

M.S. Degree

Minimum Requirements for Degree: 30-36 credits

The mineral preparation engineering program offers specialization in the processes used to concentrate target minerals and remove undesirable material from mined ore. Interdisciplinary study of chemistry, physics, the geological sciences and engineering are integrated to allow the characterization, separation, agglomeration, extraction and handling of mineral particles.

Since large quantities of solid waste and process water are often produced as a result of mineral extraction, pollution control technology, also, is an important aspect of mineral preparation.

Students are prepared for career opportunities in the mineral industry, consulting and research firms, environmental industry, and investment and commodity firms in the private sector.

Graduate Program—M.S. Degree

1. Complete the general university requirements (page 166).
2. Complete the master's degree requirements (page 170).
3. Complete the following:
   - MIN 415—Coal Preparation 3
   - MPR 601—Froth Flotation 3
   - MPR 606—Plant Design 3
   - MPR 688—Graduate Seminar I 1
4. Complete the thesis or non-thesis requirements:

Thesis

a. Complete the following:
   - MPR 699—Thesis 6
   - Technical electives 14

b. Minimum credits required 30

Non-Thesis

a. Complete the following:
   - MPR 698—Research/Project 6
   - Technical electives 20

b. Minimum credits required 36

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Mining Engineering

School of Mineral Engineering
Department of Mining and Geological Engineering
(907) 474-7388
www.uaf.edu/sme/MinEng.html

M.S. Degree

Minimum Requirements for Degree: 31-37

The mining engineering program emphasizes engineering as it applies to the exploration and development of mineral resources and upon the economics of the business of mining. The program offers specialization in exploration, mining or mineral beneficiation.

Students are prepared for job opportunities with mining and construction companies, consulting and research firms, equipment manufacturers, investment and commodity firms in the private sector, as well as with state and federal agencies.

Mining engineers may aspire to, and achieve, the highest positions in the industry: operating or engineering management, government agency director or entrepreneur. Starting salaries are among the highest in the engineering profession.

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Graduate Program—M.S. Degree

1. Complete the general university requirements (page 166).
2. Complete the master's degree requirements (page 170).
3. Complete the following:
   MIN 688—Graduate Seminar I 1
   MIN 689—Graduate Seminar II 1
4. Complete the thesis or non-thesis requirements:

Thesis

a. Complete the following:
   MIN 600-level courses 12
   Technical electives 11
   MIN 699—Thesis 6
b. Minimum credits required 31

Non-Thesis

a. Complete the following:
   MIN courses 12
   Technical electives 17
   MIN 698—Research/Project 6
b. Minimum credits required 37
   See Engineer of Mines.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Music

College of Liberal Arts
Department of Music
(907) 474-7555
www.uaf.edu/music/department/

M.A. Degree

Minimum Requirements for Degree: 30 credits

The M.A. degree offers advanced training in four areas of specialization: performance, music education, music theory/composition and music history. The graduate program is determined by the student and the graduate committee. Each graduate student's program is individually tailored and is designed to meet the student's professional interests and aspirations, consistent with program requirements.

Recitals and concerts provide students with a variety of musical experiences which expand their regular curriculum.

The music department of UAF is a full member of the National Association of Schools of Music, the national accrediting organization.

Graduate Program—M.A. Degree

Concentrations: Conducting, Music Education, Music History, Performance, Theory/Composition

1. Complete the following admission requirements:
   a. Take an evaluative preliminary examination.*
   b. Music education majors must complete a section pertaining to organizations, literature, knowledge of instruments and voice, and rehearsal techniques appropriate for public school music instruction.
   c. Composition majors must submit examples of previous work.
   d. Performance majors must demonstrate acquaintance with solo literature of the various historical periods through audition or submission of performance tapes.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).**
4. Complete and pass an oral examination on the major project, thesis or recital.
5. Complete 13 credits from the following:
   a. MUS 601—Introduction to Graduate Study.....3
   b. Applied Music*** 4
   c. Music theory, music history, ethnomusicology, music literature and psychology of music 6
6. Complete at least 16 credits in a primary area of specialization, with the balance in a secondary area.
7. Students majoring in vocal performance or music history must demonstrate proficiency in a foreign language appropriate to the area of concentration. Proficiency will be determined by the student's graduate committee in conjunction with the linguistics and foreign languages department.
8. Graduate students studying applied music and/or presenting recitals are governed by the same regulations concerning recital preparation, recital jury pre-hearings, and jury examinations as apply to undergraduate students. These regulations are described in the Music Handbook.
9. Minimum credits required.....30

** This preliminary exam, to help determine the areas of strength and deficiency, will cover the following areas: a) music theory, b) music history and literature, c) demonstration of keyboard proficiency, and d) performance in major area. Applicants will be accepted from any accredited institution; before admission to a degree program, however, all students (including UAF graduates) must take the preliminary examination.*

*** After completing about one-half of the program, students will meet with their committees in an oral advisory comprehensive examination. This will be concerned primarily with the progress the student has demonstrated, particularly with regard to determining the major area of specialization. Such specialization is not to be conceived narrowly as a thesis topic, but rather as a broad area in which students plan to spend an appreciable amount of their scholarly career. Advisory examinations may be repeated until such time as the student has satisfactorily defined the area of specialization. Each student, with the approval of the advisory committee, shall develop an appropriate final project or thesis. A thesis is required for students majoring in music theory and music history. Performance majors must present a graduate recital and prepare a supporting paper on selected aspects of the recital.*

**** Private lessons at either the senior or graduate level. Committee may suggest further study if remedial work is deemed necessary.*

Note: All 600-level courses are restricted to graduate students; however graduate students may elect some of their courses from upper division undergraduate courses (300- or 400-level).

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Natural Resources Management

School of Natural Resources and Agricultural Sciences
(907) 474-7083
www.uaf.edu/snras/

M.S. Degree

Minimum Requirements for Degree: 30-35 credits

Natural resources management is making and implementing decisions to develop, maintain or protect ecosystems to meet human needs and values. The core natural resources management curriculum provides students with a broad education in the various natural resources and their related applied fields. Programs can be tailored to enhance a student's depth or breadth in a given field of interest. The program is designed for students desiring careers in resources management or in other fields requiring knowledge of resources management, students planning advanced study, as well as those wishing to be better informed citizens.

The School of Natural Resources and Agricultural Sciences offers an M.S. degree in natural resources management. The courses and curriculum for this program were developed in cooperation with groups and agencies that work professionally with resource management in Alaska.

The M.S. program offers both thesis and non-thesis options. The thesis option is designed for those intending to pursue management careers requiring thorough familiarity with research procedures and techniques in one or more of the resources fields, to proceed to doctoral programs, and/or to conduct research in management problems. The non-thesis option is designed for those planning a management career involving largely non-research responsibilities such as general planning and administration, communication and public information, and impact assessment.

Thesis research in natural resources management is directed toward resource problems at high latitudes. Research by graduate students has centered on biological and physical aspects of land management in Alaska in relation to land ownership, land use planning, economic analysis and competing resources needs. Areas of emphasis have included forest management, land use planning, soil management, natural resource policy, parks and recreation management, horticulture and agronomy and animal science.

State and federal agencies such as the Alaska Department of Natural Resources, Agricultural Research Service, U.S. Forest Service, Bureau of Land Management, Natural Resource Conservation Service, and U.S. Fish and Wildlife Service contribute significantly to the instructional program, by providing guest lecturers and internship and field work opportunities for students.

Graduate Program—M.S. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete or have prior general familiarity with the major resource fields listed as concentrations under the B.S. degree requirements. Course requirements in any one field will depend on the needs of the candidate and the capabilities of the university.
5. Complete or have prior course work within the program in computer science, statistical methods and basic economics.
6. Complete the thesis or non-thesis requirements:

Thesis

a. Complete the following:

NRM 692—Graduate Seminar	3
NRM 699—Thesis	6-12
Research methods course at the 300-level or above*	3
STAT course at the 300-level or above**	3
Additional approved courses	9-15

b. Minimum credits required 30

Non-thesis

a. Complete the following:

NRM 692—Graduate Seminar	3
NRM 698—Research	3
Research methods course at the 300-level or above*	3
STAT course at the 300-level or above**	3
Additional approved courses	23

b. Minimum credits required 35

** 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.*

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Northern Studies

College of Liberal Arts
(907) 474-7126
www.uaf.edu/northern/
Interdisciplinary

M.A. Degree

Minimum Requirements for Degree: 30 credits

The northern studies program offers an interdisciplinary study of northern problems and policy issues. The purpose of the northern studies program is to give interested students a broader study of the northern region—its environment, peoples and problems.

The geographic location of UAF is outstanding for the study of northern issues. Students examine the countries and regions throughout the circumpolar North, and their distinctive problems, such as the survival of indigenous populations, environmental and wilderness issues, high rates of alcoholism and suicide, fragile environments, adaptation to extreme cold and cycles of light and darkness and adult development in small frontier societies.

The M.A. program is designed especially for students who live and work in the North and who want to expand their knowledge of the history, economics, politics, psychology and anthropology of northern regions. Many northern studies students are seeking employment with northern agencies and want to develop a broad perspective on northern issues. Some students plan to pursue doctoral work in a discipline such as history or anthropology and seek a master's degree with a broad approach. Other students are employed as teachers, military personnel, or agency staff and want a rich, interdisciplinary program. The program is suitable for any of these goals, and it is designed to be compatible with either full-time graduate study or full-time employment.

The M.A. program offers three concentrations: northern history, global environmental policy, and individualized study. Students of northern history benefit from the availability of the Alaska and circumpolar collections of the UAF library, UA Museum, and the Polar Regions Collection. The global environmental policy concentration focuses on political, social and psychological responses to environmental change. The individualized study concentration has a focus selected by the student.

The program offers a thesis or non-thesis option. The choice of option is guided by the student's interests and goals, the graduate advisory committee, and the requirements of the university. Faculty in the program are drawn from such disciplines as Alaska Native studies, art, anthropology, economics, English, geography, history, library science, political science and psychology.

For information on studying at McGill University, Montreal, Canada; the University of Copenhagen, Denmark; or opportunities for study in the former U.S.S.R., see International Study Abroad and Exchange Programs.

Graduate Program—M.A. Degree

Concentrations: Individualized Study, Global Environmental Policy and Northern History

1. Complete the general university requirements (page 166).
2. Complete the master's degree requirements (page 170).
3. Complete the following
   NORS 600—Perspectives of the North 3
   NORS 601—Research Methods and Sources in the North 3
4. Complete 2 elective courses at the 400- or 600-level 6
5. Complete 1 of the following:
   NORS 698—Project 6
   NORS 699—Thesis 6-12
6. Complete 1 of the following concentrations:

Individualized Study*

Complete 12 credits from the following:

a. Course offerings selected from the relevant department** and,
b. Courses offered within the Northern Studies program, including those in the other concentrations (below) and,
c. Any of the following:
   NORS 606—Science, Technology and Development in Northern Regions 3
   NORS 614—Human Adaptation to the Circumpolar North 3
   NORS 640—Ethics and Reporting in the Far North 3
   NORS 652—International Relations of the North 3
   NORS 660—Government and Politics of Canada 3
   NORS 662—Alaska Government and Politics 3
   NORS 668—Government and Politics of Russia 3
   NORS 680—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.*

Global Environmental Policy*

Complete 12 credits from the following:

NORS 647—U.S. Environmental Policy 3
NORS 648—Environmental Politics of the Circumpolar North 3
NORS 654—International Law and the Environment 3
NORS 655—Political Economy of the Global Environment 3
NORS 656—Science, Technology and Politics 3
NORS 658—Comparative Environmental Politics 3
NORS 613—Wilderness and Environmental Psychology 3

** The global environmental policy concentration may be used as a basis for the M.A. thesis/project.*

Note: The global environmental policy concentration is a clear track toward interdisciplinary doctoral programs.

Northern History*

a. Complete the following:
   NORS 690—Researching and Writing Northern History 3
b. Complete 9 credits from the following:
   HIST 470—Seminar in Alaska History 3
   NORS 661—History of Alaska 3
   NORS 663—Foundations of Russian History 3
   NORS 664—Modern Russia 3
   NORS 681—Polar Exploration and its Literature 3
   NORS 683—20th Century Circumpolar History 3

** The northern history concentration may be used for the M.A. thesis/project.*

7. Minimum credits required 30

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Oceanography

School of Fisheries and Ocean Sciences
Graduate Program in Marine Sciences and Limnology
(907) 474-7289
www.sfos.uaf.edu/academics/about/grad/oceanography/

M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30 credits; Ph.D.: 18 thesis credits

This program offers M.S. degrees in several concentration areas of oceanography: physical, chemical, biological, geological and fisheries. Limnological research projects are also undertaken under the oceanography degree. The Ph.D. degree is offered in oceanography.

Opportunities for laboratory and field work are available through the School of Fisheries and Ocean Sciences include the Institute of Marine Science. These include laboratories at Fairbanks, the Seward Marine Center, Kasitsna Bay, the Juneau Center, and the Fishery Industrial Technology Center at Kodiak. Research vessels operated by the institute and school include the R/V *Alpha Helix*, which has open-ocean capabilities and operates in Alaskan coastal waters, the Gulf of Alaska, and the Bering Sea, and the R/V *Little Dipper*, which operates on day trips in Resurrection Bay. Laboratory facilities include a seawater system at Seward and a variety of modern and analytical instrumentation, including stable isotope mass spectrometers, a gamma spectrometer, a flow cytometer facility, and gas and liquid chromatography equipment. Mainframe and personal computing facilities are readily accessible to graduate students.

Oceanography is both interdisciplinary and multidisciplinary. For both M.S. and Ph.D. oceanography students, research emphasis is on processes influencing the ocean's circulation, composition, biological productivity and geology. Students considering graduate study in oceanography should have a strong background in physics, chemistry, biology, geology or mathematics, and a working familiarity with the other subjects.

Graduate Program—M.S. Degree

Concentrations: Biological, Chemical, Fisheries, Geological, Physical

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete 1 of the following concentrations:
   Biological, Chemical, Geological, Physical
   a. Complete the following:
      MSL 620—Physical Oceanography 3
      MSL 630—Geological Oceanography 3
      MSL 650—Biological Oceanography 3
      MSL 660—Chemical Oceanography 3
      MSL 692—Seminar 3
      MSL 699—Thesis* ..... open
      Electives* ..... open
   b. Minimum credits required 30

   ** Appropriate to area of concentration*

Fisheries

a. Complete the following:
   MSL 620—Physical Oceanography 3
   MSL 630—Geological Oceanography 3
   MSL 640—Fisheries Oceanography 3
   MSL 650—Biological Oceanography 3
   MSL 660—Chemical Oceanography 3
   MSL 692—Seminar 3
   MSL 699—Thesis ..... open
   Electives ..... open
b. Minimum credits required 30

Graduate Program—Ph.D. Degree

1. Complete the following admission requirement:
   a. Submit GRE scores.
2. Complete the general university requirements (page 166).
3. Complete the Ph.D. degree requirements (page 169).
4. Complete course work equivalent to M.S. degree.*
5. Minimum credits required 18

** There are no fixed course requirements, nor is an M.S. degree required to earn the Ph.D. degree. However, a candidate for the Ph.D. degree in oceanography (biological, chemical, fisheries, geological, and physical oceanography) will be expected to have completed course work at least equivalent to that required for the corresponding M.S. degree.*

Note: Students are admitted to the graduate program in marine sciences and limnology on the basis of their ability and the capability of the program to meet their particular interests and needs. Applications are considered throughout the year but students should apply by March 1 to have the best chance for admission and financial support for the subsequent fall semester. Assistantship stipends are awarded competitively and limited fellowship support is available. Most students are supported on research projects that relate directly to their degree research.

Note: Oceanography majors must demonstrate field experience aboard an oceanographic vessel.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Petroleum Engineering

School of Mineral Engineering
Department of Petroleum Engineering
(907) 474-7734
www.uaf.edu/petrol/

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.

An interdisciplinary doctoral degree program is offered with specialization in petroleum engineering for qualified students. Contact the graduate program coordinator or the petroleum engineering department for more information.

Graduate Program—M.S. Degree

1. Complete the following admission requirement:
   a. Complete a B.S. degree in engineering or the natural sciences.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete the thesis or non-thesis requirements:

Thesis

a. Complete 1 course from each of the following groups:

Group 1. Drilling and production courses:

PETE 607—Advanced Production Engineering....3
PETE 666—Drilling Optimization....3
PETE 685—Non-Newtonian Fluid Mechanics....3
PETE 689—Multiphase Fluid Flow in Pipes....3

Group 2. Reservoir engineering/well test analysis/reservoir simulation courses:

PETE 610—Advanced Reservoir Engineering....3
PETE 661—Applied Well Testing....3
PETE 663—Applied Reservoir Simulation....3
PETE 683—Natural Gas Processing and Engineering....3

Group 3. Enhanced oil recovery/waterflooding courses:

PETE 630—Water Flooding....3
PETE 662—Enhanced Oil Recovery....3
PETE 665—Advanced Phase Behavior....3
PETE 670—Fluid Flow Through Porous Media....3

Group 4. Engineering/technology courses:

CE 603—Arctic Engineering....3
PETE 680—Horizontal Well Technology....3
PETE 684—Computational Methods in Petroleum Engineering....3

b. Complete the following:
   PETE 699—Thesis....6
   Elective courses*....12
c. Minimum credits required....30

Non-Thesis

a. Complete 1 course from each group in the thesis option....12
b. Complete the following:
   PETE 698—Engineering Project....6
   Electives*....18
c. Minimum credits required....36

** Electives are chosen with approval of graduate advisory committee.*

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Physics

College of Science, Engineering and Mathematics
Department of Physics
(907) 474-7339
www.uaf.edu/physics/

M.S., M.A.T., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30-33 credits; M.A.T.: 36 credits; Ph.D.: 18 thesis credits

The science of physics is concerned with the nature of matter and energy in all physical systems, from elementary particles to the structure and origin of the universe. Physics, together with mathematics and chemistry, provides the foundation for work in all fields of the physical sciences and engineering, and contributes greatly to other disciplines such as the biosciences and medicine.

Advanced study at the graduate level is offered in various areas of physics and applied physics, including many of the research specialties found at the UAF's Geophysical Institute. Faculty and student research programs currently emphasize investigations of auroral, ionospheric, magnetospheric and space plasma physics, the physics and chemistry of the upper and middle atmosphere, radio-wave propagation and scattering, solar-terrestrial relations, condensed matter physics, complex dynamics of non-linear systems, ice physics and infrasonics.

The physics department is also responsible for the graduate degree programs in general science, computational physics and space physics. These programs are also described in this catalog.

Graduate Program—M.S. Degree

1. Complete the general university requirements (page 166).
2. Complete the master's degree requirements (page 170).
3. Complete the thesis or non-thesis requirements:

Thesis

a. Complete the following:
PHYS 699—Thesis....6-12
b. Complete 4 of the following:
PHYS 611—Mathematical Physics....3
PHYS 612—Mathematical Physics....3
PHYS 621—Classical Mechanics....3
PHYS 622—Statistical Mechanics....3
PHYS 631—Electromagnetic Theory....3
PHYS 632—Electromagnetic Theory....3
PHYS 651—Quantum Mechanics....3
PHYS 652—Quantum Mechanics....3
c. Complete 12 credits from the following:
Approved PHYS 600-level courses
Approved ATM 600-level courses
d. Minimum credits required....30

Non-Thesis

a. Complete the following:
PHYS 698—Research....3-6
Approved courses....18
b. Complete 4 of the following:
PHYS 611—Mathematical Physics....3
PHYS 612—Mathematical Physics....3
PHYS 621—Classical Mechanics....3
PHYS 622—Statistical Mechanics....3
PHYS 631—Electromagnetic Theory....3
PHYS 632—Electromagnetic Theory....3
PHYS 651—Quantum Mechanics....3
PHYS 652—Quantum Mechanics....3
c. Minimum credits required*....33

** At least 30 credits must be regular course work.*

Graduate Program—M.A.T. Degree

1. Complete the general university requirements (page 166).
2. Complete the M.A.T. degree requirements (page 171).
3. Contact the department head for specific degree requirements.
4. Minimum credits required....36

Graduate Program—Ph.D. Degree

1. Complete the general university requirements (page 166).
2. Complete the Ph.D. degree requirements (page 169).*
3. Minimum credits required....18

** Demonstrate competency in a foreign language or a research tool.*

See General Science.
See Physics, Applied.
See Physics, Computational.
See Physics, Space.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Physics, Computational

College of Science, Engineering and Mathematics
Department of Physics
(907) 474-7339
www.uaf.edu/physics/

M.S. Degree

Minimum Requirements for Degree: 30-33 Credits

Computational modeling and simulations have become powerful tools in many science disciplines. For example, computational physics includes numerical modeling and computer simulations for physical processes in Earth's upper atmosphere and space environment, and for complex (non-linear) biological and physical systems.

Computational physics requires expertise in advanced computing environments, in the relevant mathematical foundations and in the specific physics discipline. This M.S. degree program is directed toward students with undergraduate academic backgrounds in physics or other closely associated fields, such as engineering, that have the appropriate physics course work. This degree is relevant for students seeking careers in any areas that require expertise in the modeling and simulation of physical systems.

Graduate Program—M.S. Degree

1. Complete the following admissions requirements:
   a. Complete a B.S. degree in physics.
   b. Complete MATH 421 and 422.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete the thesis or non-thesis requirements:

Thesis Option

a. Complete the following
   PHYS 611—Mathematical Physics I 3
   PHYS 612—Mathematical Physics II 3
   PHYS 629—Methods of Numerical Simulation in Fluids and Plasma 3
   PHYS 699—Thesis 6-12
b. Complete approved PHYS 600-level courses 6
c. Complete at least 3 credits from the following:
   Approved MATH 600-level courses (excluding MATH/PHYS 611 and 612) 3
   Approved CS 600-level courses 3
d. Minimum credits required* 30

** At least 24 credits must be from regular course work for thesis option.*

Non-Thesis Option

a. Complete the following
   PHYS 611—Mathematical Physics I 3
   PHYS 612—Mathematical Physics II 3
   PHYS 629—Methods of Numerical Simulation in Fluids and Plasma 3
   PHYS 698—Research 3-6
b. Complete approved PHYS 600-level courses 9
c. Complete at least 3 credits from the following:
   Approved MATH 600-level courses (excluding MATH/PHYS 611 and 612) 3
   Approved CS 600-level courses 3
d. Minimum credits required* 33

** At least 30 credits must be from regular course work for non-thesis option.*

See Physics.
See Physics, Space.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Physics, Space

College of Science, Engineering and Mathematics
Department of Physics
(907) 474-7339
www.uaf.edu/physics/

M.S., Ph.D. Degrees

Minimum Requirements for Degrees: M.S.: 30-33 credits;
Ph.D.: 18 thesis credits

Space physics focuses on the physics of upper atmospheres, ionospheres, magnetospheres and the interplanetary medium. It includes core physics courses and specialty courses in space physics, aeronomy, magnetospheric and auroral physics, and advanced plasma physics. The specialty courses support graduate research with faculty members at UAF's Geophysical Institute, and include areas such as numerical simulations and time-series analysis. Additional courses such as radiative transfer and physics of fluids provide added breadth.

Graduate Program—M.S. Degree

1. Complete the general university requirements (page 166).
2. Complete the master's degree requirements (page 170).
3. Complete 4 of the following:
   PHYS 626—Fundamentals of Plasma Physics.....3
   PHYS 627—Advanced Plasma Physics.....3
   PHYS 629—Methods of Numerical Simulation in Fluids and Plasma.....3
   PHYS 672—Magnetospheric Physics.....3
   PHYS 673—Space Physics.....3
4. Complete the thesis or non-thesis requirements:

Thesis

a. Complete the following:
   PHYS 699—Thesis.....6-12
   Approved PHYS electives.....12
b. Minimum credits required.....30-33

Non-Thesis

a. Complete the following:
   Approved PHYS electives.....18
   PHYS 698—Research.....3-6
b. Minimum credits required.....30-33

Graduate Program—Ph.D. Degree

1. Complete the general university requirements (page 166).
2. Complete the Ph.D. degree requirements (page 169).*
3. Complete and pass a written and oral comprehensive examination.
4. Demonstrate competency in a foreign language or a research tool.
5. Minimum credits required.....18

** Complete in accordance with the physics department's policies and procedures manual for graduate students.*

See Physics.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Psychology, Community

College of Liberal Arts
Department of Psychology
(907) 474-7007
www.uaf.edu/psych/

M.A. Degree

Minimum Requirements for Degree: Option A: 30 credits; Option B: 48 credits

The Department of Psychology offers an M.A. degree in community psychology. Doctoral study in psychology is only available through the interdisciplinary studies program of the Graduate School. Interdisciplinary programs in psychology are housed within the Department of Psychology.

The focus of this department 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, concern for social justice, as well as respect for and knowledge of diverse perspectives that include feminist, multicultural, indigenous, gay and lesbian.

In addition to active engagement in the classroom, students participate in research and community service. Programs in psychology facilitate an understanding of the human experience as interaction of biological, psychological, social and cultural processes.

The community psychology program trains master's-level practitioners in mental health and community development who can work sensitively and effectively in cross-cultural community contexts, particularly in Alaska Native settings in rural areas and urban settings with multicultural populations.

The graduate program attempts to meet the demand for trained mental health professionals in rural Alaska; however, graduates have also found employment in rural America and internationally.

The program prepares individuals who are interested in strengthening a sense of community and promoting the assets of communities as resources for primary prevention. The objectives of the program are:

1. To train master's-level psychologists for rural and cross-cultural settings.
2. To place master's-level psychologists in human and social service agencies in Alaska in both rural and semi-urban areas having large cross-cultural and rural populations.
3. To provide in-service and continuing education for mental health professionals with a special emphasis on rural and cross-cultural issues.

The program prepares generalists who are capable of designing and evaluating community-based interventions, facilitating social change and prevention, individual counseling, assessment and diagnosis. Students are expected to become cross-culturally competent in those areas critical for a rural community psychologist. The program is practice-oriented and seeks to educate reflective practitioners who can integrate theory and practice and have the requisite research skills to facilitate change at the individual and community level.

Graduate Program—M.A. Degree

1. Complete the following admission requirements:
   a. Students are accepted in the spring for the fall semester. Contact the department for application deadline, application packet and required supplementary materials. Notification of admission will occur prior to the end of the spring semester.
   b. Completion of the baccalaureate degree from an accredited institution in counseling, psychology, sociology, social work, human services, education or a related helping profession. Student with other undergraduate backgrounds may be accepted, but must complete the necessary undergraduate prerequisites as delineated by their advisor prior to advancement to candidacy. These prerequisites include abnormal psychology, developmental, social or community psychology, research methods, and statistics. It is strongly recommended that students complete these prerequisite courses before beginning their graduate course work.
   c. Have a grade point average of 3.00 or higher and/or evidence of personal and professional suitability for community psychology work, and have an interest in rural practice. In part, this will be inferred from the applicant's academic and employment history, and an interview when possible.
   d. A statement of career goals and how the M.A. degree program fits these goals (see application packet for specific instructions regarding statement).
   e. Three letters of reference with recommender forms (supplied in application packet), endorsing the applicant's admission to the community psychology program.
   f. If enrolling as a part-time student, applicant must enroll in at least 1 required course during the first semester, and register for at least 6 credits each academic year.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete Option A or Option B:

Option A:

Complete the following core program courses:*

PSY 630—Community Psychology	3
PSY 631—Community Psychology: Cross-Cultural Applications and the Ethics of Change	3
PSY 635—Field-Based Research Methods	3
PSY 636—Program Evaluation	3
PSY 650—Cross-Cultural Psychopathology	3
PSY 660—Counseling Theories and Applications I	3
PSY 662—Clinical Team/Practice	3
PSY 678—Multicultural Psychological Assessment	3
PSY 698—Project (6) or PSY 699—Thesis (6)	6
Minimum credits required	30

Option B: Students desiring a master's degree that allows them to be eligible for licensure as a Psychological Associate in the state of Alaska must complete Option A and the following additional 18 credits:*

PSY 644—Advanced Multicultural Lifespan Development	3
PSY 647—Professional Ethics	3
PSY 661—Cross-Cultural Counseling	3
PSY 666—Family and Network Therapy	3
PSY 674—Group Counseling	3
Approved electives	3
Minimum credits required	48

**Student must earn a B grade or better in each course.*

UNIVERSITY OF ALASKA FAIRBANKS
UNIVERSITY OF ALASKA FAIRBANKS
Office of Admissions and the Registrar • P.O. Box 757480 • Fairbanks, AK 99775-7480 • admissions@uaf.edu • www.uaf.edu

Rural Development

College of Rural Alaska
Department of Alaska Native and Rural Development
Fairbanks Campus (907) 474-6528
Statewide toll-free number (800) 770-9531
Anchorage office (907) 279-2700
Bristol Bay Campus (907) 842-4687
Chukchi Campus (907) 442-3400
Interior-Aleutians Campus (907) 474-6433
Kuskokwim Campus (907) 543-4582
Northwest Campus (907) 443-2201
www.uaf.edu/uafrural/

M.A. Degree

Minimum Requirements for Degree: 30 credits

The Department of Alaska Native and Rural Development (DANRD) 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 1-800-770-9531 or visit our website at http://danrd.dist-ed.uaf.edu/.

Graduate Program—M.A. Degree

1. Complete the general university requirements (page 166).
2. Complete the master's degree requirements (page 170).
3. Complete the following core courses:
   - RD 600—Circumpolar Indigenous Leadership Symposium 3
   - RD 601—Political Economy of the Circumpolar North 3
   - RD 625—Community Development Strategies: Principles and Practices 3
   - RD 650—Community-Based Research Methods 3
   - RD 651—Management Strategies for Rural Development 3
4. Complete 9-12 elective credits at the 600-level (up to 6 credits may be at the 400-level with approval from the graduate committee):
   - RD 425—Cultural Impact Analysis 3
   - RD 652—Indigenous Organization Management 3
   - RD 655—Circumpolar Health Issues 3
   - GEOG 637—Geography of Northern Development 3
   - ANS 650—Comparative Aboriginal Rights and Policies 3
   - NORS 606—Science, Technology and Development in Northern Regions 3
   - ANTH 610—Northern Indigenous Peoples and Contemporary Issues 3
   - NORS 630—Economic Issues of the Circumpolar North
   - NORS 649—Comparative Government and Politics in the Circumpolar North 3
   - CCS 608—Indigenous Knowledge Systems 3
5. Complete 1 of the following:
   - Research Project 6
   - Thesis 6-9
6. Minimum credits required 30

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Science Management

College of Science, Engineering and Mathematics
Department of Civil and Environmental Engineering
(907) 474-6121
www.uaf.edu/esm/

M.S. Degree

Minimum Requirements for Degree: 30 credits

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

Graduate Program—M.S. Degree

1. Complete the following admission requirements:
   a. Complete a bachelor's degree in a scientific field.
   b. On-the-job professional experience is recommended.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
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 engieneering management subject areas as follows:
   a. Human Element (2 courses required)
      ESM 601—Engineers in Organizations 3
      BA 607—Human Resources Management 3
   b. Project Management (2 courses required)
      ESM 609—Project Management (3)
      ESM 608—Legal Principles for Engineering Management (3)
      CE 620—Civil Engineering Construction (3) 6
   c. Quantitative Methods (1 course required)
      ESM 622—Engineering Decisions (3)
      or ESM 620—Statistics for ESM (3)
      or ESM 621—Operations Research (3) 3
   d. Financial (2 courses required)
      ACCT 602—Accounting for Managers 3
      ESM 605—Engineering Economic Analysis* 3
6. Complete the following:
   ESM 684—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 Civil Engineering for Ph.D. program.
See Engineering for Ph.D. program.
See Engineering Management.
See Environmental Engineering and Environmental Quality Science.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Software Engineering

College of Science, Engineering and Mathematics
Department of Mathematical Sciences
(907) 474-7332
www.cs.uaf.edu

M.S.E. Degree

Minimum Requirements for Degree: 30 credits

Software engineering is defined as "the application of a systematic, disciplined, quantifiable approach to the development, operation and maintenance of software" (IEEE Standard Glossary of Software Engineering Terminology).

Graduates of the UAF M.S.E. program will be prepared to develop high-quality software products which meet required deadlines within budget constraints, understand complex software-intensive systems and to participate in their development and application while adopting different process roles. Those roles include software architecture, software design, software construction, software test and software project management.

The UAF software engineering program is based on recommendations from Carnegie Mellon University's Software Engineering Institute and standardization efforts such as the international SWEBOK (Software Engineering Body of Knowledge). Local, national and international employment opportunities for software engineers continue to be numerous.

Graduate Program—M.S.E. Degree

1. Complete the UAF admission process including the following:
   a. Submit GRE general scores.
   b. Complete at least a bachelor's degree at an accredited institution with a GPA of at least 3.0. Complete course work or possess practical knowledge at the advanced undergraduate level in each of the following areas: computer organization, discrete mathematics, algorithms and data structures, object-oriented programming (e.g., C++, FORTRAN95, or Java), and an in-depth knowledge of at least two of the following topics; compiler techniques, comparative programming languages, operating systems, or database systems.
   c. Have at least two years of relevant software development experience or equivalent.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete the following:

CS 602—Software Project Management	3
SWE 671—Advanced Software Engineering	3
SWE 673—Software Requirements Engineering	3
SWE 674—Software Architecture	3
SWE 690—Graduate Seminar and Project	3
SWE 691—Graduate Seminar and Project	3
Approved electives	12

5. Minimum credits required 30

Note: Each student must take and pass a comprehensive examination covering material from all of the required courses listed in item 4 above. CS 670/ SWE 670—Computer Science for Software Engineers is required as a deficiency course for students without B.S. in computer science.

See Computer Science.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Statistics

College of Science, Engineering and Mathematics
Department of Mathematical Sciences
(907) 474-7332
www.cs.uaf.edu

M.S. Degree

Minimum Requirements for Degree: 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.

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 Mathematical Sciences.

Graduate Program—M.S. Degree

1. Complete the following admission requirement:
   a. Submit three letters of recommendation concerning the applicant's educational background and quantitative training.
   b. Submit complete transcripts for all college-level work.
   c. Submit a resume.
   d. Submit a written statement of goals.
   e. Submit GRE scores.
   f. The applicant must have completed a bachelor's degree from an accredited institution with a GPA of at least 3.0.
   g. Must have completed the following courses or their equivalent with a B grade or better: full calculus sequence (MATH 200, 201, 202); or students completing MATH 262 or 272 must take MATH 201 and 202 before acceptance; and a course in linear algebra (MATH 314), at least one introductory statistics or probability course (STAT 200, 300 or MATH 371, 408). Students lacking MATH 314 may be accepted on probation.
2. Complete the general university requirements (page 166).
3. Complete the master's degree requirements (page 170).
4. Complete the following statistics (core) courses:
   STAT 651—Statistical Theory I 3
   STAT 652—Statistical Theory II 4
   STAT 653—Statistical Theory III—Linear Models 3
   STAT 654—Statistical Consulting Seminar 1
   STAT 698—Project 6
5. Complete 2 of the following courses:
   STAT 461—Applied Multivariate Statistics 3
   STAT 602—Experimental Design 3
   STAT 605—Spatial Statistics 3
   STAT 631—Categorical Data analysis 3
   STAT 661—Sampling Theory 3
   STAT 611—Time Series 3
6. Complete at least 6 credits of approved courses from an application area or courses with substantial statistical and/or mathematical content.*
7. Minimum credits required 30

** Examples of courses for specific areas of concentration include: Wildlife WLF 621, 625; Fisheries FISH 601, 602, 621, 622, 625; mathematics MATH 641, 660 or other 600-level MATH course.*

Note: Each student must take and pass a three-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 a take-home exam covering the student's area of application. The last part is an oral exam covering any material from courses the student has taken along with their project.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Wildlife Biology

College of Science, Engineering and Mathematics
Department of Biology and Wildlife
(907) 474-7671
http://mercury.bio.uaf.edu/biolwild/

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. An unusually good opportunity is available for students to gain experience and to 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. and Ph.D. degrees. Detailed information on the graduate program in wildlife biology and management may is available from the wildlife program faculty chair.

The Alaska Cooperative Fish and Wildlife Research Unit and Institute of Arctic Biology offer a limited number of research assistantships. Teaching assistantships are available in the Department of Biology and Wildlife.

Graduate Program—M.S. Degree

1. Complete the following admission requirement:
   a. Submit scores from both the GRE General Test (required) and the GRE subject Test in Biology (highly recommended).
   b. If English is not your native language, submit scores from both the Test of Spoken English (TSE) and the Test of Written English (TWE), as well as TOEFL scores. Requests, including justification, for exceptions to this requirement should be made to the chair of the department.
2. Complete the general university requirements (page 166).
3. Complete the M.S.—with Thesis degree requirements (page 171).*
4. As part of the M.S. degree requirements, complete and pass the departmental written and oral masters Comprehensive Examination.
5. Minimum credits required.....30

** Students working in subject areas involving significant non-English literature will be expected to read the appropriate foreign language.*

See Biological Sciences for Ph.D. program.
See Biology.
See Botany.
See Wildlife Biology.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.

Zoology

College of Science, Engineering and Mathematics
Department of Biology and Wildlife
(907) 474-7671
http://mercury.bio.uaf.edu/

M.S. Degree

Minimum Requirements for Degree: 30 credits

Graduate Program—M.S. Degree

1. Complete the following admission requirement:
   a. Submit scores from both the GRE General Test (required) and the GRE subject Test in Biology (highly recommended).
   b. If English is not your native language, submit scores from both the Test of Spoken English (TSE) and the Test of Written English (TWE), as well as TOEFL scores. Requests, including justification, for exceptions to this requirement should be made to the Chair of the department.
2. Complete the general university requirements (page 166).
3. Complete the M.S.—with Thesis degree requirements (page 171).
4. As part of the M.S. degree requirements, complete and pass the departmental written and oral masters Comprehensive Examination.
5. Minimum credits required.....30

See Biological Sciences for Ph.D. program.
See Biology.
See Botany.
See Wildlife Biology.

Note: Page numbers refer to the UAF 2004-2005 academic catalog, which can be viewed online at www.uaf.edu/catalog/.