

College of Engineering

College of Engineering webpage (<https://www.uaa.alaska.edu/academics/college-of-engineering>)

Engineering embraces the wide range of cultural and technical subjects related to the planning, design and manufacture, or construction of objects necessary for civilization. An engineer is an innovator, a builder and a problem solver. Engineers turn scientific knowledge into useful goods and services and are responsible to society for their engineering design decisions. They are interested in working with people often as team members in positions of leadership. Engineers are concerned about people and ways to provide society with improved living standards.

Students may choose from the following undergraduate programs:

- A four-year program leading to a Bachelor of Science in Civil Engineering
- A four-year program leading to a Bachelor of Arts or a Bachelor of Science in Computer Science
- A four-year program leading to a Bachelor of Science in Computer Systems Engineering
- A four-year program leading to a Bachelor of Science in Electrical Engineering
- A four-year program leading to a Bachelor of Science in Mechanical Engineering
- A four-year program leading to a Bachelor of Science in Geomatics
- A two-year program leading to an Associate of Applied Science in Geomatics
- Minors in Computer Science, Computer Systems Engineering, Electrical Engineering, Geographic Information Systems and Mechanical Engineering.

Accreditation

The following programs are accredited by the Engineering Accreditation Commission of ABET (<http://www.abet.org>):

- Bachelor of Science in Civil Engineering
- Bachelor of Science in Computer Systems Engineering
- Bachelor of Science in Electrical Engineering
- Bachelor of Science in Mechanical Engineering

The Bachelor of Science in Geomatics is accredited by the Applied Science Accreditation Commission of ABET (<http://www.abet.org>).

The Bachelor of Science in Computer Science is accredited by the Computing Accreditation Commission of ABET (<http://www.abet.org>).

Civil Engineering

The Civil Engineering Department offers a Bachelor of Science (BS) in Civil Engineering (CE) to prepare students for the profession. Knowledge of mathematical and physical sciences gained by study, experience and practice is applied with judgment to develop ways to utilize materials and forces of nature for the progressive well-being of humanity. Students are prepared for improving and protecting the

environment; providing facilities for community living, industry and transportation; and providing structures for the use of humanity. The Civil Engineering Department also offers a minor in Civil Engineering.

Computer Science

The Computer Science and Engineering Department offers a Bachelor of Arts (BA) and a Bachelor of Science (BS) in Computer Science (CS). Students learn the fundamental principles of computer science and important issues in computing so they may pursue advanced degrees or enter the workplace as productive, competent software development or information technology professionals. Graduates learn the necessary skills to solve a wide range of real-world problems using a variety of computing technologies and platforms and are prepared for a variety of professional opportunities involving computer technology. The Computer Science and Engineering Department also offers a minor in Computer Science.

Computer Systems Engineering

The Computer Science and Engineering Department offers a Bachelor of Science (BS) in Computer Systems Engineering (CSE). Graduates of the program have a solid foundation in the fundamental concepts of computer hardware and software design, electrical engineering, mathematics, and physics, and can apply these skills to solve real-world problems. Graduates are in a position to take advantage of a wide variety of professional opportunities available to computer systems engineers in industries including computer software, computer hardware, telecommunications, electronics, consulting, health care, aviation, energy, national defense, robotics and a broad spectrum of financial institutions. The Computer Science and Engineering Department also offers a minor in Computer Systems Engineering.

Electrical Engineering

The Electrical Engineering Department offers a Bachelor of Science (BS) in Electrical Engineering (EE). Graduates of the program have a solid foundation in mathematics, physics and chemistry as well as computer programming fundamentals, circuit theory, signals analysis, electromagnetics, instrumentation and control theory. Upper-level students have the opportunity to select advanced engineering electives in computer design and interfacing, digital signal processing, antenna theory, power distribution and others. Graduates are in a position to take advantage of a wide variety of professional opportunities, including those that serve the infrastructure and energy needs of Alaskan communities, and are well prepared for an engineering career in a technologically changing world and for graduate programs in electrical engineering and related areas. The Electrical Engineering Department also offers a minor in Electrical Engineering.

Mechanical Engineering

The Mechanical Engineering Department offers a Bachelor of Science (BS) in Mechanical Engineering (ME). Graduates of the program have a solid foundation in mathematics, physics and chemistry as well as engineering mechanics, materials science, thermodynamics and heat transfer. That foundation serves as the basis for interdisciplinary design, teamwork, and for lifelong learning. Upper-level students have the opportunity to select from advanced electives in fatigue and fracture;

vibrations; renewable energy systems; composite materials; heating, ventilating, air-conditioning and refrigeration (HVAC&R); and others. Graduates are in a position to take advantage of a wide variety of professional opportunities, including those that serve the infrastructure and energy needs of Alaskan communities, and are well prepared for an engineering career in a technologically changing world and for graduate programs in mechanical engineering and related areas. The Mechanical Engineering Department also offers a minor in Mechanical Engineering.

Geomatics

The Department of Geomatics offers a two-year Associate of Applied Science (AAS) in Geomatics, a four-year Bachelor of Science (BS) in Geomatics, and a minor in Geographic Information Systems (GIS). Geomatics embraces the traditional disciplines of land surveying, mapping, geodesy, photogrammetry and hydrography, together with the newer disciplines of remote sensing, digital photogrammetry, and spatial or geographic information systems (GIS). Geomaticians help design, map and manage the natural and the man-made resources of the earth. Their skills and efforts are important in project development and environmental protection. They gather, analyze and manipulate data; map results; and help design new developments. The disciplines used in geomatics are based on advancing technologies and use an integrated approach to the acquisition, analysis, storage, distribution, management and application of spatially referenced data.

Preparation

While in high school, students can prepare for entering and succeeding in the university engineering program. In order to be the best prepared, students should complete the following high school courses with minimum grades of C:

Code	Title	Credits
Algebra	2 years	
Chemistry	1 year	
English	3 years	
Physics	1 year	
Trigonometry	1/2 year	

Students successfully completing the above courses should be prepared to enroll in the first year of courses that count toward the engineering degree. Students without the above preparatory courses will need to take equivalent university courses before taking some of the first year of courses that count toward the engineering degree.