

# Electrical Engineering

College of Engineering and Mines  
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

The M.E.E. degree program, designed for the practicing professional engineer, focuses on a major project. The M.S. degree includes a written thesis and oral defense for those students interested in research and development. UAF offers an engineering Ph.D. program for students with an approved curriculum. Capable students with undergraduate degrees in physics, mathematics or related sciences, as well as in various branches of engineering, may also be admitted for graduate study. A student with adequate background can usually complete M.S. requirements within two academic years and a Ph.D. in another three academic years.

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

A number of on- and off-campus research facilities are available to students. Satellite, rocket and ground-based communication studies are carried out both on campus and at Poker Flat Research Range. The Sounding Rocket Laboratory provides opportunities for developing instrumentation for sounding rocket payloads launched from Poker Flat Research Range—the only university-operated rocket range in the world. The Arctic Region Supercomputing Center on campus provides a wide array of tools for digital system research. The department also has a variety of research laboratories available, including microwave, wireless communications, ultra wide band technology, waves, power electronics/robotics, instrumentation and digital laboratories.

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

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

## Graduate Program—M.E.E. Degree

1. Complete the following admission requirement:
  - a. Submit GRE scores.
2. Complete one of the following admission requirements:
  - a. Complete a bachelor's degree in electrical engineering.
  - b. Students with bachelor's degrees in other fields should work out a program to address any background deficiencies with their graduate committee.
3. Complete the general university requirements (page 182).
4. Complete the master's degree requirements (page 186).
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 one of the following admission requirements:
  - a. Complete a bachelor's degree in electrical engineering.
  - b. Students with bachelor's degrees in other fields should work out a program to address any background deficiencies with their graduate committee.
3. Complete the general university requirements (page 182).
4. Complete the master's degree requirements (page 186).
5. Minimum credits required.....30  
See Engineering for Ph.D. program.