

ELECTRICAL ENGINEERING

College of Engineering and Mines
Department of Electrical and Computer Engineering
907-474-7137
<http://cem.uaf.edu/ece/>

MEE, MS Degrees

Minimum Requirements for Degrees: MEE: 32 credits;
MS: 30 credits

The MEE degree program is designed for the practicing professional engineer, and focuses on a major project. The MS degree includes a written thesis and oral defense for students interested in research and development. UAF offers an engineering PhD 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 MS requirements within two years and a PhD in another three years.

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

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

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

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

MEE 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 202).
 4. Complete the master's degree requirements (page 206).
 5. Minimum credits required*32
- * At least 26 credits must be at the F600-level. A research project is not required, although up to 6 credit hours of research may be completed as part of the degree program. If a research project is part of the degree program, an oral project presentation and defense is required.

MS 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 202).
 4. Complete the master's degree requirements (page 206).
 5. Minimum credits required30*
- * At least 24 credits must be at the F600-level.
See Engineering for PhD program.