Electrical engineers design and develop electrical and electronic systems and devices such as communications equipment, integrated circuits, and computers. Many electrical engineers, calling on their imagination and creative talents, are involved in cutting edge research.

By applying the physics principles relating to electricity, magnetism, sound, and light, electrical engineers develop products and services that benefit society and meet its needs.

Electrical engineering is the largest field within the engineering profession; approximately one-third of the world's engineers are electrical engineers.

And because electrical engineering affects so many aspects of life, graduates of programs such as those at UMass Dartmouth find positions in industry and government agencies at starting salaries that are among the highest offered to college graduates.

www.umassd.edu/engineering/ece

Career paths in electrical engineering

As an electrical engineer, you can be a designer, researcher, scientist, educator, consultant, entrepreneur, executive, public official or astronaut. An electrical engineering degree also serves as excellent preparation for medical or law school. A degree in electrical engineering offers a variety of opportunities for careers that are interesting and well-paying.

Specialty areas include:

**Acoustics**
This specialization involves the design of hearing aids, sonar, ultrasonic imaging, and hi-fi audio systems.

**Aerospace**
As an electrical engineer in the aerospace industry, you can work on navigation projects such as global positioning systems, aircraft electronics (avionics), mobile power, and radar.

**Antennas and propagation**
This specialty area includes antenna theory, electromagnetic signal propagation, scattering, and remote imaging.

**Biomedical**
Electrical engineers undertake key research that applies the concepts and methods of the physical and engineering sciences to diverse areas of biology and medicine.

**Medical instrumentation**
Engineers are involved with the design, manufacture, and testing of medical instruments and systems that diagnose and treat illnesses.

**Communication systems**
Engineers focus on those systems that transfer information in various ways.

**Consumer electronics**
Engineers design and develop multi-media entertainment systems, digital high-definition TV, digital radio, advanced games, camcorders, and other home and office electronics.

**Control systems and robotics**
Engineers design automatic control systems for aircraft autopilots, automobile cruise controls, home heating and cooling, the national power grid, and industrial manufacturing facilities.

**Electron devices**
Engineers are interested in the physics and phenomena of electron and ion devices: semiconductors, quantum effect, displays and imaging, power, photovoltaics, solid-state sensors and actuators.

**Lasers and electro-optics**
Engineers work on all aspects of opto-electronic and photonic materials, devices and systems including light-emitting diodes (LEDs), lasers, and fiber optics.

**Signal processing**
These engineers focus on doing research and development in digital processing of a variety of signals such as speech, music, sonar and radar signals, satellite signals or geophysical measurements.

**Solid-state circuits**
Engineers design solid-state integrated circuits for applications including computers, communications, signal processing, and optoelectronics.

**Power systems**
Engineers design and improve electrical power systems that can better respond to society's needs.

**Underwater systems**
The engineer focuses on marine applications such as underwater communications, navigation, and instrumentation.
At UMass Dartmouth, the Department of Electrical and Computer Engineering offers bachelor of science, master of science, and Ph.D. degrees in electrical engineering.

Our undergraduate program prepares students for the continually changing, high-technology world of electrical engineering, by providing a strong background in science, mathematics, and engineering. Students leave the College ready for the workplace or for graduate study.

The program consists of core courses in physical science and mathematical topics, with 18 credit hours in liberal arts to ensure that students graduate with an education that is well-rounded. Students begin to focus on courses in their major during their first and second year of study. As juniors, they take courses that prepare them to specialize in specific branches of electrical engineering. During their senior year, students participate in a capstone design project where they complete a research development assignment using what they learned in the classroom. They also choose technical elective courses that develop depth in specific areas.

Students can also participate in the college's co-op and internship programs, earning money to cover college costs while also gaining the practical experience that future employers are seeking.

The College offers small class sizes; professors internationally recognized for their expertise and research work; well-equipped undergraduate laboratories; and an innovative teaching approach that helps freshmen with the demands of the program. High technology is a central component of the educational process.

Electrical engineering majors can join a number of student/professional organizations, including the Institute of Electrical and Electronics Engineers (IEEE) and the Society of Women Engineers (SWE). Student accomplishment is recognized by membership in the Zeta Chi chapter of Eta Kappa Nu, the Electrical and Computer Engineering National Honor Society.

Our program is fully accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET), the sole agency responsible for accreditation of educational programs leading to degrees in engineering. Accreditation assures employers and graduate schools that electrical engineering graduates from UMass Dartmouth have received a quality education.

Is electrical engineering the program for you? If you've done well in your math, science, and computer classes, and are interested in technology, it could be. We'd like to tell you more about electrical engineering at UMass Dartmouth—email us at umassdece@umassd.edu; visit our website (listed below) or call us at 508.910.6619.