

Contact

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Admission Requirements

(In years as established by the college)

A high school diploma with the following specific courses:

- 4 English
- 2 Algebra I & II
- 1 Geometry
- 1/2 Trigonometry
- 2 Lab Science (*chemistry & physics*)
- 2 History/Social Studies
- Academic electives (*to equal at least 17 total credits*)

To ensure current mathematical skills, students should take a mathematics course during their senior year of high school.

Major Requirements

- 52 credits Electrical & Computer Engineering
- 3 credits Basic Engineering Elective
- 15 credits Technical Electives
- 35 credits Sciences & Mathematics
- 15 credits Humanities & Social Sciences
- 9 credits Communications (*English, writing, public speaking*)

129 Minimum total credit hours required for graduation

College of Engineering

Program Description

Electrical engineers use their understanding of electrical phenomena to solve problems related to energy, the environment, transportation, communications, health care, and a host of other areas that have an important impact upon society. These problems may be very specific, such as working closely with a medical professional to develop a new surgical tool or an artificial organ. On the other hand, they may be very broad, such as leading a team to establish the goals of a more environmentally-friendly, efficient and economical energy generation and distribution system.

Equipped with a broad background of theoretical and practical knowledge, the Electrical Engineering graduate has a wide range of careers from which to choose—research, development, design, teaching, sales and management. Few professions offer the opportunity for diversity that is provided in Electrical Engineering.

The Electrical Engineering curriculum also is an excellent choice for those students uncertain about choosing a specific career. The knowledge gained through a study of the physical sciences, mathematics, engineering, written and oral communications, humanities and social sciences provides an excellent background for many career choices (e.g., medicine, business and law).

While still in school, many students participate in the profession by working with faculty on their research projects or by electing an optional co-operative work program. Our co-op work program allows students to gain valuable experience, earn money to help offset college expenses and receive college credit. Recent examples of companies offering co-op opportunities include Sensor Research and Development, Compaq, Bangor Hydro Electric Company, General Electric Company, National Semiconductor, Fairchild Semiconductor, IBM, Tundra Semiconductor, The Massachusetts Electric Co., Proctor and Gamble, Tuchenhagen, Georgia Pacific, Mead Paper, and Analog Devices. See www.eece.maine.edu/ for the most current list of open co-op opportunities.

Our facilities are modern and comprehensive. Labs support studies in electrical energy generation, distribution and conversion, digital design, robotics, distributed and parallel computing, RF photonics, wireless sensor networks, neural networks, circuits, electronics, controls, signal and image processing, semiconductor devices and microwave measurements. The ECE Department operates a network of Linux and Unix servers and workstations along with clusters of personal computers running Linux and Windows. The network topology consists of a mixture of one Gigabit and 100 Mbps switched Fast Ethernet. We have a Gigabit fiber link to the campus backbone. This allows high-speed Internet access from all Department computers. In addition, wireless networking is supported in Barrows Hall and most other areas on campus. These facilities, coupled with a student-to-faculty ratio of approximately 12:1, provide an outstanding opportunity for students to put into practice the theories learned in class.

Because there are so many career paths open to an Electrical Engineering student, it is impossible to make an exhaustive list. A partial list would include: power—the creation, transmission and distribution of electric power; communications—the transmission and reception of information (e.g., via telephone, optical fiber, satellite, radio and television); semiconductor devices—the design and manufacture of semiconductor devices like transistors, lasers, diodes and integrated circuits; control—the measurement and control of processes, motors and machinery; and electronics—development of the circuits that operate in a range of applications from consumer electronics to computers to industrial control systems. Electrical Engineering majors can look forward to a choice of jobs upon graduation.

General Education Requirements*

ENG 101	College Composition
18 credits	Human Values & Social Context area (<i>a single course may satisfy more than 1 sub-category, but a total of 18 credits must be completed</i>) Western Cultural Tradition Social Context & Institutions Cultural Diversity & International Perspectives Population & the Environment Artistic & Creative Expression
2 courses	Designated Writing Intensive (<i>1 must be within the major</i>)
2 courses	Biological or Physical Sciences (<i>must include at least 1 laboratory course</i>)
1 course	Ethics (<i>emphasis on discussion of ethical issues in 1 course or series of courses</i>)
6 credits	Mathematics (<i>including statistics & some computer science, only 3 credits in computer science can count toward this requirement</i>)
1 capstone	An approved experience in which the student integrates the components of his or her undergraduate training to perform at a professional level. The capstone experience is usually completed during the senior year in consultation with the student's academic advisor.

**All UMaine students must complete these general education requirements, which are counted in the total credit hours required for graduation and may be contained in the Major Requirements previously listed.*

Specialized Information

Potential students are encouraged to explore the department web page at www.eece.maine.edu/ for the latest and most comprehensive information.

Graduate Study

The Electrical and Computer Engineering (ECE) Department offers the Master of Science (M.S.) degrees in both Electrical Engineering and Computer Engineering, and the Doctor of Philosophy (Ph.D.) degrees in Electrical and Computer Engineering. Thesis and non-thesis options are available for the M.S. degree. In order for a student to become a candidate for a graduate degree in Electrical Engineering or Computer Engineering, he/she must either have completed a Bachelor of Science degree in Electrical or Computer Engineering, or have otherwise demonstrated a high scholastic competency in all of the required undergraduate courses for that degree. The ECE Department has active research programs in Microsensors, Microsystems (MEMS), VLSI circuit design, Microwave Acoustics, Intelligent Systems, Communications, RF Photonics, Wireless Sensor Networks, and Cluster Supercomputing. For information on the graduate programs see www.eece.maine.edu/programs/grad/.

Academic Programs 2008-2009

Please refer to the web site (<http://factsheets.umaine.edu/>) for the most updated version of the fact sheets.

This fact sheet is intended for informational purposes only and is subject to change.