

Electrical Engineering

Bachelor of Science Degree

Contact

Donald Hummels, Interim Chair
 Department of Electrical and
 Computer Engineering
 5708 Barrows Hall, Room 101
 Orono, ME 04469-5708
 207-581-2223
 fax: 207-581-4531
 chair@eece.maine.edu
 eece.umaine.edu

Admission Requirements

(In years as established by the college)

A high school diploma with the following specific courses:

- 4 English
- 1 Biology (recommended)
- 2 Algebra I & II
- 1 Geometry
- 1 Pre-Calculus
- 2 Lab Science (chemistry and 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.

Did You Know?

Since 2004, two UMaine ECE students have been named Outstanding Electrical and Computer Engineering Students by the national Eta Kappa Nu and Tau Beta Pi honor societies: Matthew Rodrigue of Farmington, Maine, and Priyanth Chandrasekar of India. In its 44-year history, only 48 people have received the Eta Kappa Nu award, including another UMaine student, Louise Veilleaux, in 1979. UMaine, the University of Illinois at Urbana-Champaign, the University of California Berkeley, and the University of Missouri Rolla are the only institutions with three winners.

College of Engineering

Program Description

Electrical engineers use their understanding of electrical phenomena to solve problems related to energy, the environment, transportation, communications, healthcare 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).

Specialized Information

At UMaine, engineering classes are small. When describing their professors and classmates, students use words like “family” and “community.” Our programs in ECE are accredited, and UMaine’s College of Engineering offers a five-year BS-MBA degree with the Maine Business School. We offer state-of-the-art teaching and research facilities, in which undergraduates have the opportunity to do meaningful research alongside faculty. Professors, not graduate students, teach classes. We have a high placement rate in top graduate programs, and UMaine’s Foster Center for Student Innovation offers courses in innovation engineering. UMaine also is home to one of the country’s oldest honors programs. Undergraduate research opportunities for ECE students include cluster supercomputing, micro- and nanofabrication technology, coding and information theory, and wireless sensor networks. During the summer and academic year, students can work with researchers in the department under the National Science Foundation Research Experience for Undergraduates program. We also offer paid summer research opportunities for junior high school students through NASA. Our students have the opportunity to work on and off campus with organizations such as National Semiconductor, Fairchild Semiconductor, IBM, Analog Devices, Kewware Technologies, General Electric and NASA research centers. An estimated 70 percent of ECE graduates participate in at least one co-op or research job — either on campus or in industry — during their time at UMaine.

Associated Honor Societies and Student Organizations

UMaine has chapters of Eta Kappa Nu and Tau Beta Pi, national engineering honor societies, and the Society of Women Engineers. Students are encouraged to join the Institute of Electrical and Electronic Engineers (IEEE) and given opportunities to attend scientific conferences.

Representative Courses

ECE 101	Introduction to Electrical and Computer Engineering	ECE 402	Electrical and Computer Engineering Design Project
ECE 177	Introduction to Programming for Engineers	ECE 403	Electrical and Computer Engineering Design Project
ECE 210	Electrical Networks I	ECE 414	Feedback Control Systems
ECE 211	Electrical Networks II	ECE 427	Electric Power Systems
ECE 214	Electrical Networks Laboratory	ECE 444	Analog Integrated Circuit Design
ECE 271	Microcomputer Architecture and Applications	ECE 445	Analysis and Design of Digital Integrated Circuits
ECE 275	Sequential Logic Systems	ECE 453	Microwave Engineering
ECE 211	Electrical Networks II	ECE 462	Introduction to Basic Semiconductor Devices
ECE 214	Electrical Networks Laboratory	ECE 464	Microelectronics Science and Engineering
ECE 271	Microcomputer Architecture and Applications	ECE 465	Introduction to Sensors
ECE 300	Seminar	ECE 466	Sensor Technology and Instrumentation
ECE 314	Signals and Systems	ECE 473	Computer Architecture and Organization
ECE 323	Electric Power Conversion	ECE 471	Microprocessor Applications Engineering
ECE 342	Electronics I	ECE 473	Computer Architecture and Organization
ECE 343	Electronics II	ECE 477	Hardware Applications Using C
ECE 351	Fields and Waves	ECE 484	Communications Engineering II
ECE 383	Communications Engineering	ECE 486	Digital Signal Processing
ECE 401	Electrical and Computer Engineering Design Project	ECE 498	Selected Topics in ECE with EE Focus

Career and Graduate Opportunities

We have a nearly perfect job and graduate school placement rate. Our graduates work in industries including energy, wireless communications, healthcare, nanotechnology and defense. Employers of our graduates include: Portsmouth Naval Shipyard, Bath Iron Works, National Semiconductor, Fairchild Semiconductor, Analog Devices Inc, IBM, General Electric, General Dynamics, Central Maine Power, Kepware Technologies, Alegro Systems, NASA, the Department of Defense and many other organizations.

UMaine Graduate Programs

Master of Science in Computer Engineering
Master of Science in Electrical Engineering
Doctor of Philosophy in Computer Engineering
Doctor of Philosophy in Electrical Engineering

About UMaine

The University of Maine, founded in Orono in 1865, is the state's premier public university. It is among the most comprehensive higher education institutions in the Northeast and attracts students from across the U.S. and more than 60 countries. It currently enrolls 12,000 total undergraduate and graduate students who can directly participate in groundbreaking research working with world-class scholars. Students are offered 88 bachelor's degree programs, 64 master's degree programs, 25 doctoral programs and one of the oldest and most prestigious honors programs in the U.S. The university promotes environmental stewardship on its campus, with substantial efforts aimed at conserving energy, recycling and adhering to green building standards in new construction. For more information about UMaine, go online (umaine.edu). Equal opportunity information also is available online (umaine.edu/eo).

How do I apply?

Visit go.umaine.edu for an application as well as information about academics and life at UMaine.



Academic Programs 2011–12

The latest versions of the UMaine fact sheets are online (factsheets.umaine.edu). This fact sheet is intended for informational purposes only and is subject to change.

