

## 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

- 48 credits Electrical & Computer Engineering
- 3 credits Basis Engineering Elective
- 6 credits Computer Science
- 12 credits Technical Electives
- 38 credits Sciences & Mathematics
- 15 credits Humanities & Social Sciences
- 9 credits Communications (*English, writing, speech*)

*128 Minimum total credit hours required for graduation*

## College of Engineering

### Program Description

Computer Engineering involves the design and development of systems based on computers and complex digital logic devices. These systems find use in such diverse tasks as computation, communication, entertainment, information processing, artificial intelligence and control.

A computer engineer must know how to select and interconnect the electronic and mechanical devices which make up a computer-based system, activities usually associated with electrical engineering. However, the computer engineer must also be capable of developing the software that makes a computer system perform its task. They might need to know, for example, which programming language is best for a particular need or the most efficient way to store or process data. This area is normally associated with computer science. Thus, a computer engineer must be proficient with computer science topics as well as electrical engineering material.

A computer engineer, equipped with a broad background in electrical engineering and computer science, will be entering an exciting and rapidly growing profession with unlimited opportunities in industry, government and education. While still in school, many students participate in the profession 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 Bangor Hydro Electric Company, General Electric Company, National Semiconductor, Fairchild Semiconductor, IBM, Kepware Technologies, The Massachusetts Electric Co., Proctor and Gamble, Delorme, Georgia Pacific, Mead Paper, BAE, and Analog Devices. See [www.ecece.maine.edu/](http://www.ecece.maine.edu/) for the most current list of open co-op opportunities.

Our facilities are modern and comprehensive. Labs support studies in microprocessors, digital design, computer architecture, robotics, distributed and parallel computing, RF photonics, wireless sensor networks, neural networks, circuits, electronics, controls, 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 Windows or Linux. The network topology consists of 100 Mbps switched Fast Ethernet, 100 Mbps FDDI, and 10 Mbps switched Ethernet. We have a 100 Mbps Fast Ethernet 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. 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.

### Career Opportunities

Computer Engineering graduates may choose from many career opportunities in the public and private sectors. A sampling of job possibilities includes engineer, electrical designer, electrical engineer, design and applications engineer, test engineer, power systems engineer and product planner. A sampling of career fields includes computer aided design—developing hardware and software to aid in the design process, computer aided manufacturing—applying computers to the manufacturing process to cut costs and increase quality, hardware design—developing devices based on microprocessors or programmable logic devices, software design—writing the programs that control the operation of computer-based systems, and integrated circuit design—designing integrated circuits for use in a wide variety of applications. Computer 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 &amp; 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](http://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/](http://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.