Computer engineers are involved with the design, implementation, and application of computing systems and networks. They apply electrical engineering techniques and computer science concepts to develop dependable, cost-effective hardware and software systems.

With computers being so prevalent in society, computer engineering has become the fastest growing area within engineering. By 2010, computer and electrical engineering are expected to become the two largest segments within the engineering profession.

It is also a field that offers a wide variety of challenging, interesting work, including research, design, and development of hardware and software, as well as the electronic or software components that comprise typical computer systems.

And it’s a field with significant career potential. Wherever there are computers, there are well-paying jobs for computer engineers. 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.

Specialty areas include:

**Artificial intelligence**
Engineers involved in artificial intelligence design and build computer systems that can perform cognitively at the same level as human beings.

**Computer architecture**
Engineers involved in computer architecture specialize in the analysis, design, and implementation of computer systems: processor and memory component configuration, interface, control and operation.

**Computer networks**
These engineers focus on computer communications theory, network protocol development, network architecture specification and implementation, network security, and quality of service.

**Computer systems performance evaluation**
Engineers concentrate on analysis of computer systems performance using specific models, simulation, and measurement techniques.

**Database systems**
Engineers involved in database systems specialize in various aspects of information management systems, from design and development, to actual operations.

**Dependable computing**
These engineers specialize in the analysis and design of computer-based systems that can adapt reliably to a variety of situations.

**Distributed computing**
Engineers focus on the distribution of computing research, and often develop systems that use networks of commodity computers to produce super computers.

**Microprocessors**
Engineers are involved in specifications for a machine’s assembly language; the development of microcode to realize a design; or in the selection and integration of off-the-shelf components to construct a specialized microprocessor configuration.

**Software engineering**
Software engineers specialize in applying scientific knowledge and techniques to the development, operation, and maintenance of software and associated products.

**Electronics and integrated circuits**
Engineers specialize in electronics materials and devices. They may work with either analog or digital VLSI design, or focus on improving the chips that comprise the modern computer’s central processing unit.

**Career paths in computer engineering**

[www.umassd.edu/engineering/ece](http://www.umassd.edu/engineering/ece)
At UMass Dartmouth, computer engineering is offered within the Department of Electrical and Computer Engineering. You can earn your bachelor's degree, and go on for your master of science degree in computer engineering, or a Ph.D. in electrical engineering with a computer engineering option.

Our curriculum gives you a solid grounding in engineering fundamentals, with specialized study in engineering mathematics, circuit design, computer architecture and organization, operating systems, database systems, computer networks, fault-tolerant computing, and software engineering.

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 computer 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.

Computer engineering majors can join a number of student/professional organizations, including the Institute of Electrical and Electronics Engineers (IEEE), the Association for Computing Machinery (ACM), 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 computer engineering graduates from UMass Dartmouth have received a quality education.

Is computer 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 computer engineering at UMass Dartmouth—email us at umassdece@umassd.edu; visit our web site (listed below); or call us at 508.910.6619.

www.umassd.edu/engineering/ece