



UMass

Dartmouth

COLLEGE OF ENGINEERING

Brief description of majors

Civil Engineering

There are five principal areas of civil engineering: environmental, structural, water resources, geotechnical and soil mechanics and transportation. Typical work involves planning, designing and building bridges, tunnels, highways, dams, harbors, skyscrapers, irrigation systems, water supply systems and waste disposal facilities.

Computer Engineering

Career choices within computer engineering include: artificial intelligence, computer architecture, computer networks, database systems, embedded systems, software engineering, digital electronics and solid-state circuits. Computer engineers apply electrical engineering techniques and computer science concepts to develop dependable, cost-effective hardware and software systems.

Computer Science

Career choices within computer science include: computer software engineer—applications or systems software, computer systems administrator, computer network systems and data communication specialist, network and computer systems administrator, information system programmer, computer systems analyst, object oriented technology specialist and database specialist or administrator, computer support specialist, and computer programmers. In general, computer scientists design and implement innovative algorithms with various programming languages to communicate with computing hardware in diverse application domains that solve societal computing problems.

Electrical Engineering

Career fields within electrical engineering include: acoustics, aerospace, antennas and propagation, medical instrumentation, communication systems, consumer electronics, control systems and robotics, lasers and electro-optics, signal processing, solid-state circuits, power systems and underwater systems. Electrical engineers design and develop electrical and electronic systems and devices such as communications equipment, integrated circuits, and computers.

Materials: Materials Technology Option

The new economy of New England is based on research and development. The Materials Technology option includes a mix of fundamentals of technology with a business minor that leads to careers in the business of technology. Students

in this program will make careers on the business side of high-tech companies, in technology assessment for financial organizations, intellectual property and project management. This option offers an engineering path for students who want less of a math focus than the conventional routes to engineering practice.

Materials: Materials And Biomaterials Engineering Option

This option prepares students for a career in research and development by focusing on the fundamentals of new technologies such as soft electronics, biomedical engineering and nanotechnology. In the medical area, for instance, there is constant pressure for improved designs, better processing, and greater reliability. This creates a need for large numbers of engineers in the areas of development, testing, quality control, production and after-market support. There are also similar jobs in large universities, research hospitals, and government and commercial laboratories. Additionally, many companies are able to grow based on a concept developed by an engineer. Many materials graduates pursue a master's or doctoral degree (usually with full support from a graduate assistantship), while others pursue a medical degree.

Mechanical Engineering

Mechanical engineering can lead to a wide variety of careers. There are three main fields within mechanical engineering: design, manufacturing, and thermal and fluid sciences. Some of the products mechanical engineers work on include: jet engines, automobiles, gas turbine power plants, steam turbines, air conditioning systems, automated manufacturing equipment, machine tools, elevators, robots, surgical instruments and underwater vehicles.

Physics

The field of physics encompasses theoretical studies, experimental research and the development of computer models as well as new devices to probe the mysteries of nature. Physicists work on space projects, environmental problems, designing advanced computers, lasers, solar cells, solid-state electronics, medical devices, and fundamental research into the nature of matter.