

# Computer Engineering

## Bachelor of Computer Science (B.Sc.)

Computer engineering is critical to the operation of many systems in areas such as banking, communications, manufacturing, power generation, and transportation. Progress in computer science, and accumulated experience with the production of software for industry have led to the emergence of new disciplines in the area of computer software and networking. The Department of Computer Engineering currently offers two majors: Software Engineering and Computer Networks Engineering.

Software Engineering, defined as "the application of systematic, disciplined, quantifiable approaches to the development, operation, and maintenance of software," is concerned with the theoretical and practical aspects of the detailed design, building, testing, modification, optimization, maintenance, and management of large, high-quality software systems for a wide range of applications across society. The software engineering degree program stresses the technical, systematic, and managerial aspects of the software engineering process, but places primary emphasis on the technical facets of designing, building, and modifying large and complex software systems.

This program - intended for students who wish to pursue careers in research, development, operations, and information technology management in the computer networking industry and electronic commerce - is designed to address a specific need in an industry that is growing rapidly.

In Network Engineering, students become experts in computer networking and computing infrastructure. Areas of study range from securing and managing bandwidth to providing Domain Name Servers (DNS). Dynamic Host Configuration Protocol (DHCP), wireless design and support, and Wide Area Network (WAN) design are also covered.

The Bachelor of Science (B.Sc.) degree in Computer Engineering offers courses in various types of computer network concepts, protocols and technologies, so that students can master skills for design, analysis, implementation, setup, maintenance, administration and management of computer network enterprises. The program also provides basic knowledge for designing and developing network-based and web-based applications.

Besides gaining technical knowledge within the software and networking fields, students also study the specific aspects of computer science relevant to each engineering field as the core of each program. This includes study of operating systems concepts, compilers, computer graphics, computer networks, database systems concepts, artificial intelligence, theoretical computer science, and "object oriented" methodology and programming languages. Students also learn principles of effective and reliable design, mathematics, and other sciences that are traditionally studied by engineers. The synthesis of theory and practice found in this program leads to knowledge adapted to immediate professional value. Extra English reading comprehension and writing development courses, as well as text and reference books in the original English language, will enable students to communicate effectively in English upon degree completion.

This degree requires the completion of a minimum of 148 course credits over 5 years.

As a result of completing this program, graduates will be able to:

- Apply well-defined techniques, methods, and tools to ensure the correctness, reliability, performance, maintainability, and usability of software systems
- Demonstrate the successful practice of computer engineering, including its scientific principles, rigorous analysis, and creative design
- Have a broad-based knowledge of relevant, state-of-the-art and emerging issues in engineering with an emphasis on computer engineering
- Demonstrate skills for effective communication and responsible teamwork, show professional attitudes and ethics suitable for a multidisciplinary working environment, and engage in lifelong learning
- Advance to graduate-level studies

Graduates of Computer Engineering can work in small start-up companies or in highly complex organizations. In addition, graduates within each of the two majors are capable of working in operational groups with other hardware and software engineers.

Please click on the [Course List](#) link to view all the courses offered in this degree.