# COMPUTER ENGINEERING (BS)

*Offered jointly by the School of Computing and Department of Electrical and Computer Engineering*

## Bachelor of Science in Engineering

The Computer Engineering major requires a total of 126 credits. Computer Engineering majors are required to complete the following:

| Course | Title | Credits |
|---|---|---|
| CSE 2050 | Data Structures and Object-Oriented Design | 3 |
| CSE 3100 | Systems Programming | 3 |
| CSE 2301 | Principles and Practice of Digital Logic Design | 4 |
| CSE 2500 | Introduction to Discrete Systems | 3 |
| CSE 3150 | C++ Essentials | 3 |
| or CSE 3160 | Functional Programming Fundamentals | |
| CSE 3666 | Introduction to Computer Architecture | 3 |
| CSE 4300 | Operating Systems | 3 |
| CSE 4302 | Computer Organization and Architecture | 3 |
| or ECE 5402/ CSE 5302 | Computer Architecture | |
| ECE 2001 | Electrical Circuits | 4 |
| ECE 3101 | Signals and Systems | 3 |
| ECE 3201 | Electronic Circuit Design and Analysis | 4 |
| ECE 3401 | Digital Systems Design | 3 |
| or ECE 5401 | Advanced Digital Systems Design | |
| ECE 3421 | Very Large Scale Integrated (VLSI) Design and Simulation | 4 |
| ECE 4900W | Communicating Engineering Solutions in a Societal Context | 1 |
| ECE 4901 | Electrical and Computer Engineering Design I | 2 |
| ECE 4902 | Electrical and Computer Engineering Design II | 3 |
| MATH 2110Q | Multivariable Calculus | 4 |
| MATH 2210Q | Applied Linear Algebra | 3 |
| MATH 2410Q | Elementary Differential Equations | 3 |
| STAT 3345Q | Probability Models for Engineers | 3 |
| Elective Courses | | 3 |

### Professional Requirements (PR)

A student must take at least three courses (for a total of at least nine credits) of Professional Requirements from the following list:

| Course | Title | Credits |
|---|---|---|
| ECE 3111 | Systems Analysis and Design | 4 |
| ECE 3431/CSE 3802 | Numerical Methods in Scientific Computation | 3 |
| ECE 3221 | Digital Integrated Circuits | 3 |
| ECE 4112 | Digital Communications and Networks [1] | 3 |
| ECE 4121 | Digital Control Systems | 3 |
| ECE 4131 | Introduction to Digital Signal Processing | 3 |
| ECE 4451 | | 3 |
| CSE 2102 | Introduction to Software Engineering | 3 |
| CSE 3300 | Computer Networks and Data Communication | 3 |
| CSE 3400 | Introduction to Computer and Network Security | 3 |
| CSE 4400 | Computer Security | 3 |
| CSE 4709 | Networked Embedded Systems | 3 |
| CSE 3500 | Algorithms and Complexity | 3 |
| CSE 3504 | Probabilistic Performance Analysis of Computer Systems [1] | 3 |

[1] At least one of the PR courses must be ECE 4112 Digital Communications and Networks or CSE 3504 Probabilistic Performance Analysis of Computer Systems.

### Design Laboratories

A student must take ECE 3411 Microprocessor Applications Laboratory and at least one additional course of Design Laboratory from the following list:

| Course | Title | Credits |
|---|---|---|
| CSE 3350/ECE 4401 | Digital Design Laboratory | 3 |
| ECE 4402 | | |
| ECE 4114 | Software-Defined Radio Design Laboratory | 3 |
| ECE 4132 | Image Processing Systems Laboratory | 3 |

### Concentration in Naval Science and Technology

The concentration in Naval Science and Technology is designed to expose students to engineering concepts and topics of importance to the Navy and industries that support naval science and technology. It is focused on facilitating interactions between students and naval professionals as well as hands-on and experiential activities related to senior design projects or independent study projects that have naval science and technology connections.

All Computer Engineering majors must also complete nine credits of Naval Science and Technology Coursework topics, distributed as follows:

| Course | Title | Credits |
|---|---|---|
| ENGR 3109 | Navy STEM Professional Development Seminar (at least three credits) | 3 |
| Select two of the following: | | 6 |
| ECE 4095 | Special Topics in Electrical and Computer Engineering | |
| ECE 4900W | Communicating Engineering Solutions in a Societal Context | |
| ECE 4901 | Electrical and Computer Engineering Design I | |
| ECE 4902 | Electrical and Computer Engineering Design II | |

Students electing to complete the concentration must do so in their primary major, and as such select elective coursework from their primary discipline. Students electing to use their Senior Design course sequence must have their project topic approved by both their departmental senior design coordinator and either the director of the Navy STEM Program or the Associate Dean for Undergraduate Education.

Students electing to use Special Topics courses or Independent Study/Research courses must have the course or research topic approved by both their department and either the director of the Navy STEM Program or the Associate Dean for Undergraduate Education. Other courses relevant to naval science and technology may be considered for the concentration by petition to the director of the Navy STEM Program or the Associate Dean of Undergraduate Education. Students may not apply courses used in this concentration to fulfill requirements for other concentrations or minors. The concentration in Naval Science and Technology is restricted to U.S. citizens.

The Computer Engineering program combines coursework in computer science and electrical engineering providing a program that focuses on the design of computer hardware and digital systems.

The Computer Engineering undergraduate program educational objectives are that our alumni/ae: make technical contributions to design, development, and manufacturing in their practice of computer engineering, advance in their professional career and engage in professional development or post-graduate education to pursue flexible career paths amid future technological changes.

The Computer Engineering program is accredited by the Engineering Accreditation Commission of ABET, www.abet.org (https://www.abet.org).

## University General Education Requirements

Every student must meet a set of core requirements to earn a baccalaureate degree, in addition to those required by the student's major course of study and other requirements set by the student's school or college. For more information about these requirements, please see General Education Requirements (https://catalog.uconn.edu/undergraduate/gen-ed-requirements/).

## College of Engineering Degree Requirements

Students must meet a set of requirements established by the college in addition to the University's General Education requirements. For more information, see the College of Engineering (https://catalog.uconn.edu/undergraduate/engineering/#requirementstext) section of this catalog.