

COMPUTER ENGINEERING MAJOR (B.S.)

<http://ceps.unh.edu/ece/computer-engineering-bs>

Description

In addition to the university's mandatory Discovery Program requirements, degree candidates must complete our core program (freshman through junior years). In the senior year, students select professional technical electives in the areas of their interest. They also carry out a student-designed project to acquire both breadth and depth of study and to integrate knowledge across course boundaries.

For a detailed semester by semester list of requirements for the four years of study, please refer to the Degree Plan tab.

Requirements

In addition to Discovery Program requirements, the department has a number of grade-point average and course requirements:

- Any computer engineering major whose cumulative grade-point average in ECE and computer science courses is less than 2.0 during any three semesters will not be allowed to continue as a computer engineering major.
- Computer engineering majors must achieve a 2.0 grade-point average in ECE and CS courses as a requirement for graduation.

To make an exception to any of these departmental requirements based on extenuating circumstances, students must petition the department's undergraduate committee. Mindful of these rules, students, with their adviser's assistance, should plan their programs based on the distribution of courses found in the Degree Plan tab.

Required Courses

CS 415	Introduction to Computer Science I	4
CS 416	Introduction to Computer Science II	4
CS 515	Data Structures	4
CS 520	Assembly Language Programming and Machine Organization	4
ECE 401	Perspectives in Electrical and Computer Engineering	4
ECE 541	Electric Circuits	4
ECE 543	Introduction to Digital Systems	4
ECE 548	Electronic Design I	4
ECE 562	Computer Organization	4
ECE 583	Designing with Programmable Logic	4
ECE 602	Engineering Analysis	4
ECE 603	Electromagnetic Fields and Waves I	4
ECE 633	Signals and Systems I	3
ECE 634	Signals and Systems II	3
ECE 647	Random Processes and Signals in Engineering	3
ECE 649	Embedded Microcomputer Based Design	4
ECON 402	Principles of Economics (Micro)	4

or EREC 411	Environmental and Resource Economics Perspectives	
MATH 425	Calculus I	4
MATH 426	Calculus II	4
MATH 527	Differential Equations with Linear Algebra	4
MATH 645	Linear Algebra for Applications	4
PHYS 407	General Physics I	4
PHYS 408	General Physics II	4
Capstone ²		
ECE 791	Senior Project I	2
ECE 792	Senior Project II	2
Professional Electives		
Choose two ECE 700-level courses ¹		8
Select two courses from the following:		8
CS 619	Introduction to Object-Oriented Design and Development	
CS 620	Operating System Fundamentals	
CS 659	Introduction to the Theory of Computation	
CS 671	Programming Language Concepts and Features	
CS 700:799		
CS 730W	Introduction to Artificial Intelligence	
CS 760W	Introduction to Human-Computer Interaction	
CS 767W	Interactive Data Visualization	
CS 770W	Computer Graphics	
DS 773	Database Management and Systems Analysis	
or DS 774	E-Business	
ECE 634	Signals and Systems II	
ECE 651	Electronic Design II	
ECE 795	Electrical and Computer Engineering Projects	
ECE 796	Special Topics	
Total Credits		109

¹ Choose two 700-level courses not including ECE 795 or ECE 796.

² Honors students who complete ECE 791H Senior Honors Project I and ECE 792H Senior Honors Project II satisfy one professional elective requirement as well as the requirements for ECE 791 Senior Project I and ECE 792 Senior Project II.

Degree Plan

Course	Title	Credits
First Year		
Fall		
ECE 401	Perspectives in Electrical and Computer Engineering	4
MATH 425	Calculus I	4
CS 415	Introduction to Computer Science I	4
ECON 402 or EREC 411	Principles of Economics (Micro) or Environmental and Resource Economics Perspectives	4
Credits		16
Spring		
ECE 543	Introduction to Digital Systems	4
MATH 426	Calculus II	4

CS 416	Introduction to Computer Science II	4
ENGL 401	First-Year Writing	4
	Credits	16
Second Year		
Fall		
ECE 562	Computer Organization	4
PHYS 407	General Physics I	4
MATH 527	Differential Equations with Linear Algebra	4
CS 515	Data Structures	4
	Credits	16
Spring		
ECE 583	Designing with Programmable Logic	4
PHYS 408	General Physics II	4
CS 520	Assembly Language Programming and Machine Organization	4
MATH 645	Linear Algebra for Applications	4
	Credits	16
Third Year		
Fall		
ECE 541	Electric Circuits	4
ECE 602	Engineering Analysis	4
ECE 633	Signals and Systems I	3
ECE 649	Embedded Microcomputer Based Design	4
Discovery Program Category		4
	Credits	19
Spring		
ECE 548	Electronic Design I	4
ECE 603	Electromagnetic Fields and Waves I	4
ECE 634	Signals and Systems II	3
ECE 647	Random Processes and Signals in Engineering	3
Discovery Program Category		4
	Credits	18
Fourth Year		
Fall		
Two Professional Electives		8
Two Discovery Program Categories		8
ECE 791	Senior Project I	2
	Credits	18
Spring		
Two Professional Electives		8
Discovery Program Category		4
ECE 792	Senior Project II	2
	Credits	14
	Total Credits	133