Computer Engineering, B.S.

Computer Engineering encompasses the science and technology of design, construction, implementation, testing, and maintenance of integrated software and hardware components of modern computing systems and computer–controlled equipment (cell phones, video games, laptops).

Matriculation Requirements

To be admitted to the BSCE program a student must complete the following courses with a minimum grade of C in these courses and a grade point average of 2.5 or above. A student not meeting all of the admission requirements may request in writing, a provisional admission status for a semester from the department. the provisional admission status must be approved by the computer engineering program coordinator.

Code	Title	Credit Hours
MATH 1210	Calculus I QL	4
MATH 1220	Calculus II	4
PHYS 2210	Physics for Scientists and Engineers I PP	4
PHYS 2215	Physics for Scientists and Engineers I Lab	1
PHYS 2220	Physics for Scientists and Engineers II PP	4
PHYS 2225	Physics for Scientists and Engineers II Lab	1
CS 1400	Fundamentals of Programming	3
ECE 1000	Introduction to Electrical and Computer Engineering	3
ECE 2700	Digital Design I	3
ECE 2705	Digital Design I Lab	1
ECE 2250	Circuit Theory	3
ECE 2255	Circuit Theory Lab	1

Program Requirements

Code	Title	Credit Hours
Total Credit Hours		**124**
General Education Requirements		**38 Credits**
ENGL 1010	Introduction to Academic Writing CC	3
or ENGH 1005	Literacies and Composition Across Contexts CC	
ENGL 2010	Intermediate Academic Writing CC	3
MATH 1210	Calculus I QL	4
American Institutions:		3
Complete one of the following:		
HIST 2700 & HIST 2710	US History to 1877 AS and US History since 1877 AS (6)	
HIST 1700	American Civilization AS (3)	
HIST 1740	US Economic History AS (3)	
POLS 1000	American Heritage AS (3)	
POLS 1100	American National Government AS (3)	
Complete the following:		
HLTH 1100	Personal Health and Wellness TE	2
or EXSC 1097	Fitness for Life TE	
PHIL 205G	Ethics and Values IH GI	3
Distribution Courses:		
COMM 1020	Public Speaking HH	3
COMM 2110	Interpersonal Communication SS	3
Fine Arts (Choose from list)		3
Biology (Choose from list)		3
PHYS 2210	Physics for Scientists and Engineers I PP	4

CHEM 1210	Principles of Chemistry I PP	4
Discipline Core Requirements		**86 Credits**
ECE 1000	Introduction to Electrical and Computer Engineering	3
ECE 2250	Circuit Theory	3
ECE 2255	Circuit Theory Lab	1
ECE 2700	Digital Design I	3
ECE 2705	Digital Design I Lab	1
ECE 2750	Engineering Analysis	3
ECE 3710	Applied Probability and Statistics for Engineers and Scientists	3
ECE 3730	Embedded Systems I	3
ECE 3740	Digital Design II	3
ECE 3760	Electronic Systems	3
ECE 3765	Electronic Systems Lab	1
ECE 3770	Signals and Systems	3
ECE 3780	Communication Systems and Circuits	3
ECE 3785	Communication Systems and Circuits Lab	1
ECE 4700	Computer Architecture for Engineering Applications	3
ECE 4730	Embedded Systems II	3
ECE 4750	Digital Signal Processing	3
ECE 4755	Digital Signal Processing Lab	1
ECE 4760	VLSI Design	3
ECE 4765	VLSI Design Laboratory	1
ECE 4900	Electrical and Computer Engineering Capstone I WE	3
ECE 4950	Electrical and Computer Engineering Capstone II WE	3
CS 1400	Fundamentals of Programming	3
CS 1410	Object Oriented Programming	3
CS 2300	Discrete Mathematical Structures I	3
CS 2370	C Plus Plus Programming	3
CS 2420	Introduction to Algorithms and Data Structures	3
CS 3060	Operating Systems Theory	3
PHYS 2215	Physics for Scientists and Engineers I Lab	1
PHYS 2220	Physics for Scientists and Engineers II PP	4
PHYS 2225	Physics for Scientists and Engineers II Lab	1
CHEM 1215	Principles of Chemistry I Laboratory	1
MATH 1220	Calculus II	4
Elective Requirements		
Complete 3 credits from the following:		3
ECE 4780	Wireless and Mobile Communications (3)	
ECE 4850	Machine Learning (3)	
ECE 481R	Electrical and Computer Engineering Internship (1-3)	
ECE 4260	Smart Power Grids (3)	

Graduation Requirements

1. Completion of a minimum of 124-semester credits, with a minimum of 40 upper-division credits.

2. Overall grade point average of 2.5 or above, with a minimum grade of C in all discipline core and elective requirements.

3. Residency hours - minimum of 30 credit hours through course attendance at UVU. 10 of these hours must be within the last 45 hours earned. At least 12 of the credit hours earned in residence must be in approved CS + ECE courses.

4. All transfer credit must be approved in writing by UVU.

5. No more than 80 semester hours and no more than 20 hours in CS and ECE courses of transfer credit.

6. No more than 6 semester hours may be earned through independent study.

7. Successful completion of at least one Global/Intercultural course.
8. Taking Fundamentals of Engineering (FE) (NCEES - Electrical and Computer Engineering) exam.

Graduation Plan

This graduation plan is a sample plan and is intended to be a guide. Your specific plan may differ based on your Math and English placement and/or transfer credits applied. You are encouraged to meet with an advisor and set up an individualized graduation plan in Wolverine Track (http://www.uvu.edu/wolverinetrack/).

First Year

Semester 1		Credit Hours
CS 1400	Fundamentals of Programming	3
ECE 1000	Introduction to Electrical and Computer Engineering	3
ENGL 1010 or ENGH 1005	Introduction to Academic Writing CC or Literacies and Composition Across Contexts CC	3
MATH 1210	Calculus I QL	4
General Education		3
	Credit Hours	**16**

Semester 2		
CS 1410	Object Oriented Programming	3
ENGL 2010	Intermediate Academic Writing CC	3
MATH 1220	Calculus II	4
PHYS 2210	Physics for Scientists and Engineers I PP	4
PHYS 2215	Physics for Scientists and Engineers I Lab	1
	Credit Hours	**15**

Second Year

Semester 3		
CS 2420	Introduction to Algorithms and Data Structures	3
ECE 2700	Digital Design I	3
ECE 2705	Digital Design I Lab	1
ECE 2750	Engineering Analysis	3
PHYS 2220	Physics for Scientists and Engineers II PP	4
PHYS 2225	Physics for Scientists and Engineers II Lab	1
	Credit Hours	**15**

Semester 4		
ECE 3740	Digital Design II	3
ECE 3770	Signals and Systems	3
ECE 2250	Circuit Theory	3
ECE 2255	Circuit Theory Lab	1
CHEM 1210	Principles of Chemistry I PP	4
CHEM 1215	Principles of Chemistry I Laboratory	1
	Credit Hours	**15**

Third Year

Semester 5		
CS 2300	Discrete Mathematical Structures I	3
CS 2370	C Plus Plus Programming	3
ECE 3730	Embedded Systems I	3
ECE 3710	Applied Probability and Statistics for Engineers and Scientists	3
ECE 3760	Electronic Systems	3
ECE 3765	Electronic Systems Lab	1
	Credit Hours	**16**

Semester 6		
CS 3060	Operating Systems Theory	3
ECE 4730	Embedded Systems II	3
ECE 3780	Communication Systems and Circuits	3
ECE 3785	Communication Systems and Circuits Lab	1
ECE 4700	Computer Architecture for Engineering Applications	3
COMM 1020	Public Speaking HH	3
	Credit Hours	**16**

Fourth Year

Semester 7		
ECE 4750	Digital Signal Processing	3

ECE 4755	Digital Signal Processing Lab	1
ECE 4760	VLSI Design	3
ECE 4765	VLSI Design Laboratory	1
General Education		2
General Education		3
ECE 4900	Electrical and Computer Engineering Capstone I WE	3
	Credit Hours	**16**
Semester 8		
ECE 4950	Electrical and Computer Engineering Capstone II WE	3
ECE Elective		3
COMM 2110	Interpersonal Communication SS	3
General Education		3
PHIL 205G	Ethics and Values IH GI	3
	Credit Hours	**15**
	Total Credit Hours	**124**

Program Learning Outcomes

1. Computer Engineering students will demonstrate proficiency in the areas of programming languages, algorithms, operating systems, computer architecture, digital and analog circuits, and engineering design.
2. Students will demonstrate proficiency in relevant aspects of mathematics as well as the appropriate concepts from physics and electrical circuits and devices.
3. Students will successfully apply these principles and practices to a variety of problems.
4. Students will demonstrate an understanding of differential and integral calculus, advanced engineering mathematics, discrete structures, probability and statistics, physics, and other areas of science pertinent to engineering.
5. Students will apply modern engineering tools necessary for computer engineering practice including computer based analysis, design, and simulation tools.
6. Students will have the ability to work with others and on multidisciplinary teams in both classroom and laboratory environments.
7. Students will demonstrate critical and abstract thinking.
8. Students will demonstrate an ability to communicate effectively.
9. Students will obtain familiarity with basic ideas and contemporary issues in the social sciences and the humanities.
10. Students will obtain an understanding of social, professional, and ethical issues related to engineering.
11. The majority of the graduates will be immediately employed in high-technology companies that utilize their computer engineering skills.
12. Strong graduates from the program will be prepared to enter graduate programs.