

# Computer Engineering, BS

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## Program Description

The Bachelor of Science Degree in Computer Engineering teaches students the necessary skills to design, analyze, and build electromechanical systems. Computer engineering is a field that includes elements of computer science, electrical engineering, software development, and mechanical engineering. Computer engineering emphasizes hardware integration with software or electrical systems. Although similar to electrical engineering, computer engineering provides more teaching in the areas of programming, sensors, and actuators. A student with a degree from this program will be well prepared to pursue an advanced degree in engineering or computer science, or to pursue a technical career in industrial and technological environments.

## Professional Licensure/Certification (PLC) Requirements

The curriculum for programs at Dixie State University customarily leading to licensure have been designed to meet the educational licensure/certification requirements in Utah as well as to prepare students to apply for licensure exams in the State of Utah. The licensure boards in each state are responsible for establishing the requirements for licensure/certification for their state. Requirement may vary state to state and may change at any time. Students who intend to use their DSU degree to secure licensure in any state other than Utah will need to review the professional licensure disclosures in that state pertaining to their program and consult with the state professional licensing board. For more information, visit the State Authorization and Professional Licensure (<https://academics.dixie.edu/state-authorization/>) web page and select your program, or speak to the director of your program.

## Admission Requirements

The admissions process works as follows:

1. Student applies and is accepted to DSU
  2. Student designates their major as Pre-Engineering (pursuing Associate of Pre-Engineering)
  3. Student passes the following courses with a C- or better:
    - CS 1400
    - CS 1410
    - MATH 1210
    - MATH 1220
    - PHYS 2210
    - PHYS 2215
1. Student meets with the engineering advisor to ensure that required courses are complete and to make an academic plan
  2. Student's major is switched from Pre-Engineering to Computer Engineering

## Program Curriculum

**125.5 credits**

### DSU General Education Requirements

All DSU General Education requirements must be fulfilled. A previously earned degree may fulfill those requirements, but courses must be equivalent to DSU's minimum General Education standards in American Institutions, English, and Mathematics.

Code	Title	Hours
	General Education Core Requirements ( <a href="https://catalog.dixie.edu/programs/generaleducation/#gerequirementstext">catalog.dixie.edu/programs/generaleducation/#gerequirementstext</a> )	
	English	3-7
	Mathematics	3-5
	American Institutions	3-6
	Life Sciences	3-10
	Physical Sciences	3-5
	Laboratory Science	0-1
	Fine Arts	3

Literature/Humanities	3
Social & Behavioral Sciences	3
Exploration	3-5

\* Exploration GE must be fulfilled with either a BIOL or CHEM GE course to meet ABET accreditation requirement for 30 credits of math and science.

## Computer Engineering Required Courses

Code	Title	Hours
ENGL 3010	Professional Writing and Business Ethics (Prerequisites: ENGL 1010 and ENGL 2010, or equivalent placement score)	3
MATH 1210	Calculus I (MA) (Prerequisites: MATH 1010 and MATH 1050 and MATH 1060 or MATH 1080, or equivalent placement score)	4
MATH 1220	Calculus II (MA)	4
MATH 2250	Differential Equations and Linear Algebra	4
MATH 3400	Probability & Statistics	3
PHYS 2210 & PHYS 2215	Physics/Scientists Engineers I (PS) and Physics/Scientists Engineers I Lab (LAB)	5
PHYS 2220 & PHYS 2225	Physics/Scientists EngineersII and Physics/Scientists Engineers II Lab	5
CS 1400	Fundamentals of Programming	3
CS 1410	Object Oriented Programming	3
CS 2420	Introduction to Algorithms and Data Structures	3
CS 2450	Software Engineering	3
CS 2810	Computer Organization and Architecture	3
CS 3005	Programming in C++	3
CS 3310	Discrete Mathematics	3
CS 3410	Distributed Systems	3
CS 3400	Operating Systems	3
MECH 2210 & MECH 2215	Circuits and Circuits Lab	4
MECH 2250 & MECH 2255	Sensors & Actuators and Sensors & Actuators Lab	4
MECH 3200 & MECH 3205	Systems & Controls and Systems & Controls Lab	3.5
ECE 1200	MATLAB and Arduino	1
ECE 2700 & ECE 2705	Digital Circuits and Digital Circuits Lab	4
ECE 2280 & ECE 2285	Microelectronics and Microelectronics Lab	4
ECE 3730 & ECE 3735	Embedded Systems I and Embedded Systems I Lab	4
ECE 3500	Signals and Systems	3
ECE 4730 & ECE 4735	Embedded Systems II and Embedded Systems II Lab	4
ECE 4500	Digital Signal Processing	3
ECE 4005	CE Product Design I	3
ECE 4015	CE Product Design II	3

## Computer Engineering Technical Elective Courses

Code	Title	Hours
<b>Complete 9 credits from the following:</b>		
	Any ECE 4xxx, excluding ECE 4000, 4005, 4010, 4015, 4500	
	Any MECH 4xxx, excluding MECH 4000, 4010	

Any MATH 4xxx, excluding MATH 4500, 4890, 4900

Any CHEM 4xxxx, excluding CHEM 4000R, 4910

ANY CS 4xxx, excluding CS 4600, 4920R, 4990, 4991R, 4992

MATH 3150 Introduction to Partial Differential Equations

MATH 3450 Statistical Inference

CS 3510 Advanced Algorithms/Data Structures

CS 3010 Mobile Application Development for Android

CS 3020 Mobile Application Development: iOS

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## Graduation Requirements

1. Complete a minimum of 125.5 college-level credits (1000 and above).
2. Complete at least 40 upper-division credits (3000 and above).
3. Complete at least 30 upper-division credits at DSU for institutional residency.
4. Cumulative GPA 2.0 or higher.
5. Grade C- or higher in all Computer Engineering Required Courses and Technical Elective Courses.
6. Pass the Fundamentals of Engineering (FE) Exam