COMPUTER ENGINEERING MAJOR: BIOMEDICAL ENGINEERING OPTION (B.S.)

Description

The Biomedical Engineering (BME) Option is intended to provide the core of knowledge expected of a computer and/or electrical engineer to provide engineering services in the biomedical field. Electrical and/or computer engineers with this option in biomedical engineering combine engineering principles with medical and biological sciences to design and create equipment, devices, computer systems, and software used in healthcare. The BME option is embedded in both the Electrical Engineering (EE) program and the Computer Engineering (CE) program.

Requirements

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

1. 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.
2. 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

Code	Title	Credits
CS 415	Introduction to Computer Science I	4
CS 416	Introduction to Computer Science II	4
CS 515	Data Structures and Introduction to Algorithms	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	
DS 673	Database Management and Systems Analysis	
or DS 774	E-Business	
ECE 651	Electronic Design II	
ECE 795	Electrical and Computer Engineering Projects	
ECE 796	Special Topics	
Biomedical Engineering Option Required Courses		
BMS 508	Human Anatomy and Physiology II	4
BENG 762	Biomedical Engineering	4
or BENG 766	Biomaterials	
or CHE 714	Chemical Sensors	
ECE 784	Biomedical Instrumentation	4
Elective Course		4
Elective Course		4
Total Credits		129

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.