

# ELECTRICAL 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 electrical engineering major whose cumulative grade-point average in ECE courses is less than 2.0 during any three semesters will not be allowed to continue as an electrical engineering major.
2. Electrical engineering majors must achieve a 2.0 grade-point average in ECE 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 410C or CS 415	Introduction to Scientific Programming/C Introduction to Computer Science I	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 602	Engineering Analysis	4
ECE 603	Electromagnetic Fields and Waves I	4
ECE 617	Junior Laboratory I	4
ECE 618	Junior Laboratory II	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 651	Electronic Design II	4
ECON 402 or EREC 411	Principles of Economics (Micro) Environmental and Resource Economics Perspectives	4
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
<b>Capstone</b>		
ECE 791	Senior Project I	2

ECE 792	Senior Project II	2
<b>Mathematics or Science Elective</b>		
Select one from the following:		3-4
CHEM 405	Chemical Principles for Engineers	
MATH 644	Statistics for Engineers and Scientists	
MATH 647	Complex Analysis for Applications	
PHYS 505	General Physics III	
PHYS 615	Classical Mechanics and Mathematical Physics I	
<b>Professional Electives</b>		
Choose four ECE 700-level courses		16
<b>Biomedical Engineering Option Required Courses</b>		
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
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Total Credits		124-125