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

https://ceps.unh.edu/electrical-computer-engineering/program/bsceng/computer-engineering-biomedical-engineering-option

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 advisor’s assistance, should plan their programs based on the distribution of courses found in the Degree Plan tab.

Required Courses

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MATH 425</td>
<td>Calculus I</td>
<td>4</td>
</tr>
<tr>
<td>MATH 426</td>
<td>Calculus II</td>
<td>4</td>
</tr>
<tr>
<td>MATH 527</td>
<td>Differential Equations with Linear Algebra</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 407</td>
<td>General Physics I</td>
<td>4</td>
</tr>
<tr>
<td>PHYS 408</td>
<td>General Physics II</td>
<td>4</td>
</tr>
<tr>
<td>ECE 791</td>
<td>Senior Project I</td>
<td>2</td>
</tr>
<tr>
<td>ECE 792</td>
<td>Senior Project II</td>
<td>2</td>
</tr>
</tbody>
</table>

Professional Electives

Choose two ECE 700-level courses 1

Select two courses from the following:

- CS 619 Introduction to Object-Oriented Design and Development
- CS 620 Operating System Fundamentals
- CS 659 Introduction to the Theory of Computation
- DS 673 Database Management
- 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

Other Courses

Discovery requirements not already covered by required courses 4

Total Credits 133

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.

Student Learning Outcomes

- An ability to apply knowledge of mathematics, science, and engineering.
- An ability to design and conduct experiments, as well as to analyze and interpret data.
- An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
- An ability to function on multidisciplinary teams an ability to identify, formulate, and solve engineering problems.
- An understanding of professional and ethical responsibility.
- An ability to communicate effectively.
- The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.
- A recognition of the need for, and an ability to engage in life-long learning a knowledge of contemporary issues.
- An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.