



Students following the BME standard track are recommended to take **4 of their elective courses** in one of the following specialties to develop content depth for the major, as well as pursue individual interests. Other courses can be considered; however, these courses have been reviewed by the Program for relevant content and are approved as focused electives. Reach out to your advisor about other courses.

**For both the Bioinstrumentation and Biotherapeutics specializations, we have included minors that you may want to consider given BME course overlap.**

### **Bioinstrumentation Specialization Courses**

ECEN 4111	Engineering Applications in Biomedicine: Cardiovascular Devices & Systems
ECEN 4121	Design of Implantable Medical Devices: Neuromodulation
ECEN 4933	Engineering Genetic Circuits
ECEN 4006	Special Topics: Biomedical Optics
MCEN 4127	Biomedical Ultrasound
MCEN 4228	Special Topics: Biohybrid Robotics
MCEN 4228	Special Topics: Electromechanical Biomaterial

### **Biotherapeutics Specialization Courses**

BIEN 3800	Fundamentals of Biotechnology
BIEN 4802	Tissue Engineering and Biofabrication
BIEN 4803	Metabolic Engineering (1)
BIEN 4806	Immunoengineering
BIEN 4807	Drug Delivery
ECEN 4006	Special Topics: Biomedical Optics
MCEN 4110	Regenerative Biology and Tissue Repair
BMEN 4519	Special Topics: BME Lab Foundations

(1) prereq BCHM 4611 may be waived

### **Biomechanics Specialization Courses**

MCEN 4110	Regenerative Biology and Tissue Repair
MCEN 4113	Mechanics of Cancer (1)
MCEN 4127	Biomedical Ultrasound
MCEN 4133	Introduction to Tissue Biomechanics (2)
MCEN 4157	Modeling Human Movement
MCEN 4171	Biofluids on Microscale
MCEN 4228	Special Topics: Biohybrid Robotics
MCEN 4228	Special Topics: Advanced Biotransport
MCEN 4228	Special Topics: Fluid Mechanics in the Human Body

(1) prereq MCEN 2063 or 3021; (2) prereq MCEN 2063; (3) prereq MCEN 3021 or CHEN 3200

Electrical Minor from ECEN – 18 credit hours  
Requirements (**recommended for BME**) include

<b>Required Courses (9 Credits )</b>	
ECEN 2250	Introduction to Circuits and Electronics
ECEN 2260	Circuits as Systems
ECEN 2270	Electronics Design Lab
<b>Elective Courses Options (9 credits )</b>	
ECEN 3301	Biomedical Signals and Systems
ECEN 4111	Engineering Applications in Biomedicine: Cardiovascular Devices and Systems
ECEN 4121	Design of Implantable Medical Devices: Neuromodulation
ECEN 4933	Engineering Genetic Circuits
BMEN 3030	Bioinstrumentation

[Check ECEN for full requirements and course options](#)

Biological Minor from ChBE - 18 credits hours  
Requirements (**recommended for BME**) include

<b>Required Courses (6 Credits )</b>	
BMEN 2100	Biomedical Engineering Principles & Methods
BMEN 3010	Biotransport
<b>Elective Courses Options (12 credits)</b>	
BCHM 4611	Principles of Biochemistry
BMEN 2010	Biomaterials
BIEN 3800	Fundamentals of Biotechnology
BIEN 4802	Tissue Engineering and Biofabrication
BIEN 4803	Metabolic Engineering
BIEN 4806	Immunoengineering
BIEN 4807	Drug Delivery

[Check ChBE for full requirements and course options](#)

**Required BMEN courses on the Track**

**Recommended Specialization Courses that align with Electrical Minor**

**Recommended Specialization Courses that align with Biological Minor**