College of Engineering  
Department of Biomedical Engineering and Mechanics  
Minor in Biomedical Engineering  
Students Graduating in Calendar Year 2017

To obtain a minor in Biomedical Engineering (BME) students must first be accepted into the BME minor program. Once accepted, a student must take 6 hours of required coursework, 6 hours of approved elective courses, and 6 hours of approved BME research for a total of 18 credits. For successful completion of the minor, students must maintain a 3.0 in-Minor GPA with a minimum grade of C- or better in all courses that the student counts toward the minor. No pass/fail courses will be accepted.

**Required Courses:**

1. BMES 2104  
   Introduction to Biomedical Engineering  
   (PRE: ENGE 1104 or ENGE 1114, PHYS 2305, Co: MATH 2214)  
   3
2. BMES/BMVS 4064  
   Introduction to Medical Physiology  
   3

**Approved BME Research:**

Students may pursue one or a combination of the following options in order to fulfill the requirement:  

- Senior design courses (BSE 4125/6, ESM 4015/6, ISE 4005/6, ME 4015/6, MME 4535/6)
- Departmental undergraduate research course (BMES 4994, BSE 4994, CEE 4994, CHE 4994, CS 4994, ECE 4994, ESM 4994, ISE 4994, ME 4994, MSE 4994, MME 4994, OE/AOE 4994)  

**Approved Electives:**  

Choose 2 courses from the following list. Note, the courses offered both as electives may have hidden prerequisites. It is the responsibility of the student to assure that all prerequisites are met prior to registration for these courses.

**Total credits:**  

18
<table>
<thead>
<tr>
<th>Course Number</th>
<th>Name</th>
<th>Pre-req</th>
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<tbody>
<tr>
<td>BSE 4504</td>
<td>Bioprocess Engineering</td>
<td>BSE 3504, BIOL 2604, CHEM 2535 or CHEM 2565/H, (CHEM 3615/H or CHEM 4615)</td>
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<tr>
<td>BSE 4554/CHE 4544</td>
<td>Protein Separation Engineering</td>
<td>BSE 3504 or CHE 3144</td>
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<tr>
<td>CHE 4104</td>
<td>Process Materials</td>
<td>CHE 2164, CHEM 2535 or 2565</td>
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<tr>
<td>CHE 5214/BMES 5434</td>
<td>Polymeric Biomaterials</td>
<td>CS 3724, CS 3744</td>
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<td>CHE 5304/BMES 5304</td>
<td>Biological Transport Phenomena</td>
<td>CS 3824</td>
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<td>CS 4784</td>
<td>Human Computer Interaction</td>
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<tr>
<td>CS 4884</td>
<td>Computational Biology and Bioinformatics</td>
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<tr>
<td>ECE 4580</td>
<td>Digital Image Processing</td>
<td></td>
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<tr>
<td>ECE 4624</td>
<td>DSP and Filter Design</td>
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<tr>
<td>ECE 5605/BMES 5525</td>
<td>Stochastic Signals and Systems</td>
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<tr>
<td>ECE 5606/BMES 5526</td>
<td>Stochastic Signals and Systems II</td>
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<tr>
<td>ESM 4105</td>
<td>Engineering Analysis of Physiologic Systems I</td>
<td>ESM 2304, MATH 2214</td>
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<td>ESM 4106</td>
<td>Engineering Analysis of Physiologic Systems II</td>
<td>ESM 2304, MATH 2214</td>
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<tr>
<td>ESM 4204</td>
<td>Musculoskeletal Biomechanics</td>
<td>ESM 2304, ESM 2074 or ME 2004</td>
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<td>ESM 4224</td>
<td>Biodynamics and Controls</td>
<td>ESM 3124, ESM 4204</td>
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<td>ESM 4234</td>
<td>Mechanics of Biological Materials and Structures</td>
<td>ESM 3054, ESM 2074 or ME 2004</td>
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<td>ESM 4245</td>
<td>Mechanics of Animal Locomotion I</td>
<td>ESM 3054</td>
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<tr>
<td>ESM 4246</td>
<td>Mechanics of Animal Locomotion II</td>
<td>ESM 3054</td>
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<tr>
<td>ESM 4304</td>
<td>Hemodynamics</td>
<td>ESM 3016 or ME 3404</td>
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<tr>
<td>ISE 3614</td>
<td>Human Factors Engineering</td>
<td>STAT 4105</td>
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<tr>
<td>ISE 4624</td>
<td>Work Physiology</td>
<td>ISE 3614</td>
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<tr>
<td>ISE 5154</td>
<td>Applied Human Factors Engineering</td>
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<tr>
<td>ISE 5614/BMES 5214</td>
<td>Human Physical Capabilities</td>
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<td>ISE 5644</td>
<td>Auditory Display Design</td>
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<td>ME 4034</td>
<td>Bio-Inspired Technology</td>
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<td>ME 4754/BMES 5164</td>
<td>Impact Biomechanics</td>
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<td>ME 4864/5864</td>
<td>Micro/Nanorobotics</td>
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<td>ME 5764/BMES 5764</td>
<td>Modeling MEMS and NEMS</td>
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<td>5764/ESM 5764</td>
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<tr>
<td>MSE 4574</td>
<td>Biomaterials</td>
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<td>MSE 4584</td>
<td>Biomimetic Materials</td>
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<tr>
<td>MSE 4614</td>
<td>Nanomaterials</td>
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* Students in their senior year, with a 3.0 or better GPA, may enroll in 5000-level courses satisfying undergraduate degree requirements within their department with the permission of the course instructor and the Department Head.