## Biomedical Engineering – Program Map: Biomechanics & Biomaterials Track

### Track Requisites

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Terms</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR:2510</td>
<td>Fluid Mechanics</td>
<td>F/Sp</td>
<td>P: MATH:2560, ENGR:2710; C: ENGR:2130</td>
</tr>
<tr>
<td>ENGR:2710</td>
<td>Dynamics</td>
<td>All</td>
<td>P: MATH:1550, ENGR:2110</td>
</tr>
<tr>
<td>ENGR:2720</td>
<td>Materials Science</td>
<td>All</td>
<td>P: CHEM:1100; C: MATH:1550</td>
</tr>
<tr>
<td>ENGR:2750</td>
<td>Mechanics of Deformable Bodies</td>
<td>All</td>
<td>P: ENGR:2110; C: MATH:2560</td>
</tr>
</tbody>
</table>

### Track Electives

#### Engineering Topics

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Terms</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>BME:5401</td>
<td>Biomaterials &amp; Implant Design</td>
<td>F</td>
<td>P: ENGR:2750, BME:2500</td>
</tr>
<tr>
<td>BME:5610</td>
<td>Musculoskeletal Biomechanics</td>
<td>F</td>
<td>P: ENGR:2750, BME:2500</td>
</tr>
<tr>
<td>BME:5510</td>
<td>Cardiac and Vascular Mechanics</td>
<td>Sp</td>
<td>P: ENGR:2750, BME:2500</td>
</tr>
<tr>
<td>BME:5520</td>
<td>Cardiovascular Fluid Mechanics</td>
<td>F</td>
<td>P: BME:2500</td>
</tr>
</tbody>
</table>

#### Suggested Electives

<table>
<thead>
<tr>
<th>Course Code</th>
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<th>Terms</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENGR:2760</td>
<td>Design for Manufacturing</td>
<td>F/Sp</td>
<td>C: ENGR:2720</td>
</tr>
<tr>
<td>BME:5421</td>
<td>Cell Material Interactions</td>
<td>Sp</td>
<td>P: BME:2110</td>
</tr>
<tr>
<td>BME:5430</td>
<td>Biotransport</td>
<td>F</td>
<td></td>
</tr>
<tr>
<td>BME:5530</td>
<td>Artificial Organ &amp; Circulatory Implants Design</td>
<td>Sp</td>
<td>P: BME:2500</td>
</tr>
<tr>
<td>BME:5620</td>
<td>Intro to App Biomedical Finite Element</td>
<td>Sp</td>
<td>P: BME:2500, ENGR:2750</td>
</tr>
<tr>
<td>BME:5630</td>
<td>Kinetics of Musculoskeletal Systems</td>
<td>Sp</td>
<td>P: ENGR:2710</td>
</tr>
<tr>
<td>ME:4115</td>
<td>Finite Element I</td>
<td>All</td>
<td>P: ENGR:2750</td>
</tr>
<tr>
<td>ME:4110</td>
<td>Computer Aided Engineering</td>
<td>Sp</td>
<td>P: ENGR:2750</td>
</tr>
<tr>
<td>ME:5143</td>
<td>Comp. Fluid &amp; Therm. Engng</td>
<td>F</td>
<td>P: ME:3045</td>
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<tr>
<td>ME:5160</td>
<td>Int Mechanics of Fluids</td>
<td>F</td>
<td>P: ENGR:2510, ME:3040</td>
</tr>
<tr>
<td>ME:5167</td>
<td>Composite Materials</td>
<td>F</td>
<td>P: ENGR:2750</td>
</tr>
<tr>
<td>HHP:1100</td>
<td>Human Anatomy</td>
<td>All</td>
<td></td>
</tr>
<tr>
<td>HHP:4130</td>
<td>Skeletal Muscle Physiology</td>
<td>F</td>
<td>R: HHP:3500</td>
</tr>
<tr>
<td>HHP:4460</td>
<td>Cardiovascular Physiology</td>
<td>Sp</td>
<td>P: HHP:2400</td>
</tr>
</tbody>
</table>

#### Pre-Medicine

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Terms</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL:1412</td>
<td>Diversity of Form &amp; Function</td>
<td>All</td>
<td>P: BIOL:1411, CHEM:1110</td>
</tr>
<tr>
<td>CHEM:2210</td>
<td>Organic Chemistry I</td>
<td>All</td>
<td>P: CHEM:1120</td>
</tr>
<tr>
<td>CHEM:2220</td>
<td>Organic Chemistry II</td>
<td>All</td>
<td>P: CHEM:2210</td>
</tr>
<tr>
<td>CHEM:2410</td>
<td>Organic Chemistry Lab</td>
<td>All</td>
<td>P: CHEM:1110, CHEM:1120, CHEM:2210</td>
</tr>
<tr>
<td>BIOC:3110</td>
<td>Biochemistry</td>
<td>S</td>
<td></td>
</tr>
<tr>
<td>BIOL:2512</td>
<td>Fundamental Genetics</td>
<td>All</td>
<td>P: BIOL:1402, CHEM:1120; C: CHEM:2210</td>
</tr>
</tbody>
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**Note:** At least two electives must be from the list of Engineering Topics
Biomedical Engineering – Program Map: Biomechanics & Biomaterials Track

**Semester 1**
- Chem. I & Lab
  - CHEM:1110
- Math I
  - MATH:1550
  - ENGR:1100
- Rhetoric
  - RHET:1030
- Engr Success First Year
  - ENGR:1000

**Semester 2**
- Chem. II & Lab
  - CHEM:1120
- Math II
  - MATH:1560
- Math III
  - MATH:2550
- Eng. Prob. Solv. II
  - ENGR:1300
- Physics I / Lab
  - PHYS:1611
- BME Forum
  - BME:1010

**Semester 3**
- Foundations of Biology
  - BIOL:1411
- Math IV
  - MATH:2560
- Statics
  - ENGR:2110
- Elec. Circuits
  - ENGR:2120
- Thermo
  - ENGR:2130
- BME Seminar
  - BME:2010

**Semester 4**
- Human Physiol.
  - HHP:3500
- Bio- Materials / Mechanics & Lab
  - BME:2500
- Dynamics
  - ENGR:2710
- Physics II / Lab
  - PHYS:1612
- Biostatistics
  - BIOS:4120 or STAT:3510
- BME Seminar
  - BME:2010

**Semester 5**
- Cell Biology for Engr / Lab
  - BME:2110
- Materials Science
  - ENGR:2720
- Mech Deform Bodies
  - ENGR:2750
- Fluid Mechanics
  - ENGR:2510
- Leadership & Resourcefulness
  - BME:3010

**Semester 6**
- Systems, Instrum, & Data Acquisition / Lab
  - BME:2200
- Bioimaging & Bioinformatics / Lab
  - BME:2210
- Track Elective #1
- Track Elective #2
- GEC Elective #1
- BME Design Seminar
  - BME:4010

**Semester 7**
- BME Design I
  - BME:4910
- Track Elective #3
- Track Elective #4
- GEC Elective #3
- GEC Elective #4

**Semester 8**
- BME Design II
  - BME:4920
- Track Elective #5
- Track Elective #6
- Track Elective #7
- GEC Elective #5