### Medical Devices and Imaging Track

#### Have You Considered Continuing Your Education?
If you are an undergraduate student at NJIT, you may be eligible to pursue a master’s or Ph.D. program here!

**Requisites:**
- Your GPA should be higher than 3.0 for BS/MS
- Your GPA should be higher than 3.5 for BS/PhD

Interested? Find more about this opportunity [HERE](#).

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>BME 385</td>
<td>3</td>
<td>Cell &amp; Biomaterials Engineering Laboratory</td>
<td>MATH 112, PHYS 121 BME 304 and (MATH 279 or MATH 333)</td>
</tr>
<tr>
<td>BME 420</td>
<td>3</td>
<td>Advanced Biomaterials Science</td>
<td>BME 302, BME 304 and MTSE 301</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Course</th>
<th>Credits</th>
<th>Description</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 244 &amp; CHEM 244A</td>
<td>3</td>
<td>Organic Chemistry II (CHEM 244) And Laboratory (244A)</td>
<td>CHEM 243</td>
</tr>
<tr>
<td>CHEM 473</td>
<td>3</td>
<td>Biochemistry</td>
<td>CHEM 244 Or CHEM 245</td>
</tr>
</tbody>
</table>

### Engineering Electives

**Description:**
- Minimum two electives required
- You can choose up to 4 engineering electives and 2 will count as science electives!

### Science Electives

**Description:**
- Minimum two electives required
- You can also choose your science electives from the engineering electives list on the left.
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Course Title</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Mathematics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MATH 3XX/4XX</strong></td>
<td><strong>3</strong></td>
<td>Upper Level Mathematics Courses</td>
<td></td>
</tr>
<tr>
<td><strong>Materials Science and Engineering</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MTSE 301</strong></td>
<td><strong>3</strong></td>
<td>Material Science &amp; Engineering</td>
<td>PHYS 111 &amp; PHYS 121 and CHEM 125 &amp; CHEM 126 and MATH 111 &amp; MATH 112</td>
</tr>
<tr>
<td><strong>Physics</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PHYS 350</strong></td>
<td><strong>3</strong></td>
<td>Biophysics I</td>
<td>PHYS 121</td>
</tr>
<tr>
<td><strong>PHYS 451</strong></td>
<td><strong>3</strong></td>
<td>Biophysics of Electricity and Radiation</td>
<td>PHYS 103 or PHYS 121</td>
</tr>
<tr>
<td><strong>Industrial Engineering</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IE 355</strong></td>
<td><strong>3</strong></td>
<td>Human Factors in IE</td>
<td>Restriction: Junior standing</td>
</tr>
</tbody>
</table>

**Medical Devices Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Course Title</th>
<th>Prerequisites</th>
</tr>
</thead>
<tbody>
<tr>
<td>BME 422</td>
<td><strong>3</strong></td>
<td>Biomaterials Characterization</td>
<td>MATH 112, PHYS 121, BME 304 and MTSE 301</td>
</tr>
<tr>
<td>BME 427</td>
<td><strong>3</strong></td>
<td>Biotransport</td>
<td>MATH 222, AND (BME 303 OR R120:102 OR BIOL 201)</td>
</tr>
<tr>
<td>BME 430</td>
<td><strong>3</strong></td>
<td>Fundamentals of Tissue Engineering</td>
<td>BME 302, (BME 303 or R120:102 or BIOL 201), BME 304, MATH 222, MTSE 301</td>
</tr>
<tr>
<td>BME 352</td>
<td><strong>3</strong></td>
<td>Biomedical Thermodynamics</td>
<td></td>
</tr>
<tr>
<td>BME 321</td>
<td><strong>3</strong></td>
<td>Advance Mechanics for BME</td>
<td>BME 302</td>
</tr>
<tr>
<td>MECH 236 AND BME 601</td>
<td><strong>3</strong></td>
<td>Dynamics (2 credits) and BME 601 (1 credit) online seminar</td>
<td>BME 302</td>
</tr>
<tr>
<td>BME 351</td>
<td><strong>3</strong></td>
<td>Introduction to BioFluid Mechanics</td>
<td>BME 302, MECH 236, and (MECH 320 or BME321)</td>
</tr>
<tr>
<td>BME 451</td>
<td><strong>3</strong></td>
<td>Biomechanics I</td>
<td>MECH 236 and BME 321</td>
</tr>
<tr>
<td>Course Code</td>
<td>Credits</td>
<td>Title</td>
<td>Requirements</td>
</tr>
<tr>
<td>-------------</td>
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<tr>
<td>BME 452</td>
<td>3</td>
<td>Mechanical Behavior and Performance of Biomaterials</td>
<td>BME 302, BME 304, MATH 222, (MATH 279 or MATH 333), and BME 321</td>
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<tr>
<td>ENGR 3XX/4XX</td>
<td>3</td>
<td>- Grand Challenges Program</td>
<td>- drone Science Fundamentals - Engineering Application of Data Science (Honors)</td>
</tr>
<tr>
<td>BME 491</td>
<td>3</td>
<td>BME Research &amp; Independent Study I</td>
<td>Restrictions: - Approved requirements for credits - Research thesis required, - Professor permission</td>
</tr>
<tr>
<td>BME 492</td>
<td>3</td>
<td>Research and Independent Study II</td>
<td>BME 491 Restrictions: - Approved requirements for credits</td>
</tr>
<tr>
<td>IE 449</td>
<td>3</td>
<td>Industrial Robotics</td>
<td>CS 101, PHYS 121 Junior or Senior Standing</td>
</tr>
<tr>
<td>IE 439</td>
<td>3</td>
<td>Deterministic Model in Operations Research</td>
<td>MATH 112</td>
</tr>
<tr>
<td>IE 455</td>
<td>3</td>
<td>Robotics and Programmable Logic Controllers</td>
<td>Restrictions: Junior or Senior Standing</td>
</tr>
<tr>
<td>IE 335</td>
<td>3</td>
<td>Engineering Cost Analysis and Control</td>
<td>Restrictions: Junior standing</td>
</tr>
<tr>
<td>IE 447</td>
<td>3</td>
<td>Legal Aspects of Engineering</td>
<td>Restrictions: Junior or Senior Standing</td>
</tr>
<tr>
<td>IE 460</td>
<td>3</td>
<td>Measuring Techniques and Quality Control</td>
<td>understanding of basic probability</td>
</tr>
<tr>
<td>CS 350</td>
<td>3</td>
<td>Intro to Computer Systems</td>
<td>CS 280</td>
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### Graduate Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Units</th>
<th>Title</th>
<th>Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>IE 463</td>
<td>3</td>
<td>Invention and Entrepreneurship</td>
<td>Restriction: Junior or Senior standing or permission of instructor</td>
</tr>
<tr>
<td>IE 334</td>
<td>3</td>
<td>Engineering Economy and Capital Investment</td>
<td>Restriction: Junior or Senior standing</td>
</tr>
<tr>
<td>MATH 661</td>
<td>3</td>
<td>Applied Statistics</td>
<td></td>
</tr>
<tr>
<td>BME 651</td>
<td>3</td>
<td>Principles of Tissue Engineering</td>
<td></td>
</tr>
<tr>
<td>BME 676</td>
<td>3</td>
<td>Computational Biomechanics</td>
<td></td>
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<tr>
<td>BME 678</td>
<td>3</td>
<td>Design of Orthopedic Implants</td>
<td></td>
</tr>
<tr>
<td>BME 673</td>
<td>3</td>
<td>Bio-robotics</td>
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</tr>
<tr>
<td>BME 674</td>
<td>3</td>
<td>Principles of Neuromuscular Engineering</td>
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<tr>
<td>BME 670</td>
<td>3</td>
<td>Intro to Biomechanical Engineering</td>
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<tr>
<td>BME 671</td>
<td>3</td>
<td>Biomechanics of Human Structure and Motion</td>
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<tr>
<td>BME 688</td>
<td>3</td>
<td>Virtual Biomedical Instrument</td>
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<tr>
<td>BME 698ST</td>
<td>3</td>
<td>Advanced Virtual Biomedical Instrument</td>
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### Various

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Credits</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPSE 301</td>
<td>3</td>
<td>Introduction to Optical Science and Engineering</td>
</tr>
<tr>
<td>OPSE 310</td>
<td>3</td>
<td>Virtual Instrumentation</td>
</tr>
<tr>
<td>OPSE 402</td>
<td>3</td>
<td>High Power Laser and Photonics Applications</td>
</tr>
<tr>
<td>MET 304</td>
<td>3</td>
<td>Applied Fluid Mechanics</td>
</tr>
</tbody>
</table>

**NJIT COMPLETE CATALOGS:**

- Biomedical Engineering Undergraduate
- Biomedical Engineering Graduate