



## BIOMECHANICS CONCENTRATION

### Have You Considered Continuing Your Education?

If you are an undergraduate student at NJIT, you may be eligible to pursue a master's or PhD 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](#)

### Engineering Electives

**Description:**

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

Course	Credits	Description	Prerequisites
<b>Biomaterials Courses</b>			
<a href="#">BME 385</a>	3	Cell & Biomaterial Engineering Laboratory	MATH 112 & PHYS121 & BME 304 & (MATH 279 or MATH 333)

### Science Electives

**Description:**

- Minimum two electives required
- You can also choose your science electives from the engineering electives list on the left.

Course	Credits	Description	Prerequisites
<b>Chemistry</b>			
<a href="#">CHEM 244</a> and <a href="#">CHEM 244A</a>	3	Organic Chemistry II (CHEM244) and Laboratory (244A)	CHEM 243

<a href="#">BME 420</a>	3	Advanced Biomaterials Science	BME302 & BME 304 & MTSE301		<a href="#">CHEM 473</a>	3	Biochemistry	CHEM 244 or CHEM 245
<a href="#">BME 422</a>	3	Biomaterials Characterization	MATH 112 & PHYS 121 & BME 304 & MTSE 301		<b>Mathematics</b>			
<a href="#">BME 427</a>	3	Bio-transport	MATH 222 & (BME 303 or R120 102 or BIOL 201)		MATH 3xx/4xx	3	Upper Level Mathematics Courses –	
<a href="#">BME430</a>	3	Fundamentals of Tissue Engineering	BME 302 & (BME 303 or R120:102 or BIOL 201) & BME 304 & MATH 222 & MTSE 301		<b>Materials Science and Engineering</b>			
<a href="#">BME 352</a>	3	Biomedical Thermodynamics			<a href="#">MTEN 201</a>	3	Intro Principles of Materials Engineering	PHYS 121 and CHEM 126 and MATH 112
<b>Medical Devices Courses</b>					<b>Physics</b>			
<a href="#">BME 372</a>	3	Electronics of Medical Devices SPING ONLY	BME 111 & BME301		<a href="#">PHY 350</a>	3	Biophysics I	PHYS 121

<a href="#">BME333</a>	3	Biomedical Signals and Systems	BME301 & MATH222 & BME210
<a href="#">BME386</a>	3	Biosensor and Data Acquisition Lab SPRING ONLY	BME 301 & BME 210
<a href="#">BME 471</a>	3	Principles of Medical Imaging FALL ONLY	BME 301 & BME 210
<a href="#">BME 472</a>	3	FDA Regulation of Medical Devices SPRING ONLY	BME 301
<b>Research</b>			
ENGR 3xx/4xx	3	Grand Challenges Program, Drone Science Fundamentals, Engineering applications of Data Science (Honors)	

<a href="#">PHYS 451</a>	3	Biophysics of Electricity and Radiation	PHYS 103 or PHYS 121
<b>Industrial Engineering</b>			
<a href="#">IE 355</a>	3	Human Factors in IE	Junior standing
<a href="#">IE 449</a>	3	Industrial Robotics	CS 101, PHYS 121, junior or senior standing
<a href="#">IE 335</a>	3	Engineering Cost and Analysis Control	Junior standing
<a href="#">IE 439</a>	3	Deterministic Models in Operation Research (Honors)	MATH 112

<a href="#">BME 491</a>	3	Research and Independent Study I	Restrictions: - Approved requirements for credits - Research thesis required - Professor permission		<a href="#">IE 455</a>	3	Robotics and Programmable Logic Controllers	Junior or senior standing
<a href="#">BME 492</a>	3	Research and Independent Study II	BME 491  Restrictions: - Approved requirements for credits - Research thesis required - Professor permission		<a href="#">IE 334</a>	3	Engineering Economy and Capital Investment	Junior standing
<b>Graduate Courses</b>					<a href="#">IE 447</a>	3	Legal Aspects of Engineering	Junior or senior standing
<a href="#">BME 651</a>	3	Principles of Tissue Engineering			<a href="#">IE 460</a>	3	Measuring Techniques and Quality Control	prerequisites: understanding of basic probability
<a href="#">BME 676</a>	3	Computational Biomechanics	BME 670		<a href="#">IE 463</a>	3	Invention and Entrepreneurship	Junior or Senior standing or permission of instructor

<a href="#">BME 678</a>	3	Design of Orthopedic Implants	BME 677
<a href="#">BME 673</a>	3	Bio-robotics	
<a href="#">BME 674</a>	3	Principles of Neuromuscular Engineering	
<a href="#">BME 671</a>	3	Biomechanics of Human Structure and Motion	
<a href="#">BME 688</a>	3	Virtual Biomedical Instrument	
BME 698 ST	3	Advanced Virtual Biomedical Instrumentation	
<a href="#">BME 655</a>	3	Advanced Characterization of Material	MTSE 301 (or equivalent) and BIOL 201 (or equivalent)

<b>Graduate Courses</b>			
<a href="#">MATH 661</a>	3	Applied Statistics	MATH 112

<b>Various</b>			
<a href="#"><u>OPSE 301</u></a>	3	Introduction to Optical Science and Engineering	PHYS 121
<a href="#"><u>OPSE 310</u></a>	3	Virtual Instrumentation	CS 113 or CS 115
<a href="#"><u>OPSE 402</u></a>	3	High Power Laser and Photonics Applications	PHYS 121
<a href="#"><u>MET 304</u></a>	3	Applied Fluid Mechanics	MATH 238 or MATH 112 & PHYS 103 or PHYS 121

**NJIT COMPLETE CATALOGS:**

- [Biomedical Engineering Undergraduate](#)
- [Biomedical Engineering Graduate](#)