

Biomedical Engineering

Suggested Elective Focus Areas (EFA) Courses

BIOINFORMATICS/COMPUTATIONAL BIOLOGY

Required	<p>051:121 Intro to Bioinformatics; 002:011 Biology II, or 099:110 Biochemistry; 002:128 Fundamental Genetics, or 022:081 Human Genetics in the 21st Century; 055:033 Software Design (or equivalent);</p>
Suggested	<p>051:122 Comp. Genomics; 051:123 Bioinformatics Tools & Techniques; 002:138 Genetics and Biotech Lab, or 185:103 - Microarray Anal. & Stat¹ Bioinform;</p> <p>Suggested alternates: 004:121, or 00 4:122, 06K:275, 22C:19, 22C:21, 22C:31, 22C:144, 22C:196, 185:103</p>

BIOIMAGING

Required	<p>051:148 Digital Image Processing; 051:185 Physics of Medical Imaging; 051:186 Multidimensional Image Processing;</p>
Suggested	<p>051:188 Medical Imaging Practicum; 055:145 Pattern Recognition; 22C:151 Computer Graphics; 22M:072 Numerical Analysis;</p>

BIOMATERIALS

Suggested	<p>051:062 Design for Manufacturing; 051:168 Polymer Fundamentals (1sh), and 051:169 Polymers as Biomaterials (2sh); 051:173 Metals as Biomaterials, or 051:174 Ceramics and Glasses as Biomaterials; 051:175 Tissue Engineering; 051:176 Biomaterials Laboratory; 053:133 Finite Elements I; 057:015 Material Science;</p>
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CARDIOVASCULAR BIOMECHANICS

Required	<p>051:154 Cardiac and Vascular Mechanics; 051:155 Cardiovascular Fluid Mechanics;</p>
Suggested	<p>051:062 Design for Manufacturing, or 058:110 Computer Aided Engineering; 051:151 Intermed. Mech. Def. Bodies; 051:175 Tissue Engineering, or 027:145 Cardiovascular Physiology; 057:020 Fluid Mechanics, or 058:143 Comp. Fluid & Therm. Engng.; 058:115 Finite Element I;</p>

MUSCULOSKELETAL BIOMECHANICS

Suggested	<p>051:062 Design for Manufacturing; 051:150 Musculoskeletal Biomechanics; 051:151 Intermediate Mech. Def. Bodies.; 051:152 Ergonomics and Occ. Injuries; 051:157 Intro to Applied Biomedical Finite Element; 051:158 Orthopaedic Implants; 053:133 Finite Elements I; 057:010 Dynamics;</p>
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TISSUE ENGINEERING

Suggested	<p>051:150 Musculoskeletal Biomechanics; 051:175 Tissue Eng'g, or 051:176 Biomaterials Laboratory; 004:121 Organic Chemistry I; AND ONE OF: 051:154 Cardiac and Vascular Mechanics; 058:160 Intermediate Mechanics of Fluids; 002:138 Genetics and Biotech Lab;</p> <p>051:168 Polymer Fundamentals (1sh), and 051:169 Polymers as Biomaterials (2sh); 004:122 Organic Chemistry II; AND ONE OF: 099:110 Biochemistry; Any Genetics or Mol. Biology Course; 051:154 Cardiac and Vascular Mechanics; 058:160 Intermediate Mechanics of Fluids;</p> <p>NOTE: Recommend taking at least one of 051:154, 051:157, 058:160.</p>
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PRE-MEDICINE

<p><i>(requires the following courses normally taken as EFA)</i></p> <p>002:011 Biology II; 004:121 Organic Chemistry I; 004:122 Organic Chemistry II; 004:141 Organic Chemistry Lab; 099:110 Biochemistry;</p> <p>One course of English (including composition and literature) in addition to Rhetoric; NB: Four of the GEC courses must be used to satisfy the Social and Behavioral Sciences. These courses should include a writing component. Suggested courses include behavioral psychology, foreign language courses, and others that encourage appreciation for diversity and cultural competency. NB: Many schools also require two courses in psychology. This may be satisfied with an appropriate selection of GEC courses.</p>	
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Bold: Required course for EFA