

Biomedical Engineering

Suggested Elective Focus Areas (EFA) Courses

BIOINFORMATICS/COMPUTATIONAL BIOLOGY

Required	51:121 Intro to Bioinformatics; 2:011 Biology II, or 99:110 Biochemistry; 2:128 Fundamental Genetics, or 22:081 Human Genetics in the 21st Century; 55:033 Software Design (or equivalent);
Suggested	51:122 Comp. Genomics; 51:123 Bioinformatics Tools & Techniques; 2:138 Genetics and Biotech Lab, or 185:103 - Microarray Anal. & Stat ¹ Bioinform; Suggested alternates: 4:121, or 4:122, 6K:275, 22C:19, 22C:21, 22C:31, 22C:144, 22C:196, 185:103

BIOIMAGING

Required	51:148 Digital Image Processing; 51:185 Physics of Medical Imaging; 51:186 Multidimensional Image Processing;
Suggested	51:188 Medical Imaging Practicum; 55:145 Pattern Recognition; 22C:151 Computer Graphics; 22M:072 Numerical Analysis;

BIOMATERIALS

Suggested	51:062 Design for Manufacturing; 51:168 Polymer Fundamentals (1sh), and 51:169 Polymers as Biomaterials (2sh); 51:173 Metals as Biomaterials, or 51:174 Ceramics and Glasses as Biomaterials; 51:175 Tissue Engineering; 51:176 Biomaterials Laboratory; 53:133 Finite Elements I; 57:015 Material Science;
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CARDIOVASCULAR BIOMECHANICS

Required	51:154 Cardiac and Vascular Mechanics; 51:155 Cardiovascular Fluid Mechanics;
Suggested	51:062 Design for Manufacturing, or 58:110 Computer Aided Engineering; 51:151 Intermed. Mech. Def. Bodies; 51:175 Tissue Engineering, or 27:145 Cardiovascular Physiology; 57:020 Fluid Mechanics, or 58:143 Comp. Fluid & Therm. Engng.;; 58:115 Finite Element I;

MUSCULOSKELETAL BIOMECHANICS

Suggested	51:062 Design for Manufacturing; 51:150 Musculoskeletal Biomechanics; 51:151 Intermediate Mech. Def. Bodies.;; 51:152 Ergonomics and Occ. Injuries; 51:157 Intro to Applied Biomedical Finite Element; 51:158 Orthopaedic Implants; 53:133 Finite Elements I; 57:010 Dynamics;
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TISSUE ENGINEERING

Suggested	51:150 Musculoskeletal Biomechanics; 51:175 Tissue Eng'g, or 51:176 Biomaterials Laboratory; 4:121 Organic Chemistry I; <i>AND ONE OF:</i> 51:154 Cardiac and Vascular Mechanics; 58:160 Intermediate Mechanics of Fluids; 2:138 Genetics and Biotech Lab; 51:168 Polymer Fundamentals (1sh), and 51:169 Polymers as Biomaterials (2sh); 04:122 Organic Chemistry II; <i>AND ONE OF:</i> 99:110 Biochemistry; Any Genetics or Mol. Biology Course; 51:154 Cardiac and Vascular Mechanics; 58:160 Intermediate Mechanics of Fluids; NOTE: Recommend taking at least one of 51:154, 157, 58:160.
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PRE-MEDICINE

<i>(requires the following courses normally taken as EFA)</i>
002:011 Biology II;
004:121 Organic Chemistry I;
004:122 Organic Chemistry II;
004:141 Organic Chemistry Lab;
099:110 Biochemistry;
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.

Bold: Required course for EFA