## BIOMEDICAL ENGINEERING, BACHELOR OF ARTS

### Program Requirements

(See also General Requirements for Departmental Majors [https://e-catalogue.jhu.edu/engineering/full-time-residential-programs/undergraduate-policies/academic-policies/requirements-bachelors-degree/])

The B.A. in biomedical engineering requires 120 credits. The courses listed below must either be taken for a grade or passed by examination for advanced credit. See the Biomedical Engineering Undergraduate website [https://www.bme.jhu.edu/undergraduate/] for additional information.

The courses listed below must either be taken for a grade or passed by examination for advanced credit.

### Code | Title | Credits
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**Basic Sciences** |  |  
AS.171.101 | General Physics: Physical Science Major I | 4
or AS.171.107 | General Physics for Physical Sciences Majors (AL) |  
AS.171.102 | General Physics: Physical Science Major II | 4
or AS.171.108 | General Physics for Physical Science Majors (AL) |  
AS.173.111 | General Physics Laboratory I | 1
AS.173.112 | General Physics Laboratory II | 1
AS.030.101 | Introductory Chemistry I | 3
AS.030.102 | Introductory Chemistry II | 3
AS.030.105 | Introductory Chemistry Laboratory I | 1
AS.030.106 | Introductory Chemistry Laboratory II | 1
**Mathematics** |  |  
AS.110.108 | Calculus I (Physical Sciences & Engineering) | 4
AS.110.109 | Calculus II (For Physical Sciences and Engineering) | 4
AS.110.202 | Calculus III | 4
or AS.110.211 | Honors Multivariable Calculus |  
EN.553.291 | Linear Algebra and Differential Equations | 4
**Computer Programming** |  |  
EN.500.112 | Gateway Computing: JAVA | 3
or EN.500.113 | Gateway Computing: Python |  
or EN.500.114 | Gateway Computing: Matlab |  
**Humanities and Social Sciences** |  |  
Select courses from a coherent program, with at least 9 credits chosen from one department, including at least one 300-level course. | 24
**Biomedical Core** |  |  
EN.580.111 | Biomedical Engineering and Design | 2
EN.580.151 | Structural Biology of Cells | 3
EN.580.153 | Structural Biology of Cells Laboratory | 1
EN.580.221 | Biochemistry and Molecular Engineering | 4
EN.580.241 | Statistical Physics | 2
EN.580.242 | Biological Models and Simulations | 2
EN.580.243 | Linear Signals and Systems | 2
EN.580.244 | Nonlinear Dynamics of Biological Systems | 2
EN.580.246 | Systems and Controls | 2
EN.580.248 | Systems Biology of the Cell | 2

Select two of the following core electives:

EN.580.424 | Neuroengineering and Lab |  
EN.580.427 | Microphysiological Systems and Laboratory |  
EN.580.452 | Cell and Tissue Engineering Lab |  
EN.580.453 | Immunoengineering Principles and Applications |  
EN.580.454 | Methods in Nucleic Acid Sequencing Lab |  
EN.580.494 | Build an Imager |  

**Electives**

Select at least 25 additional credits needed to complete the 120 credit requirement for the BA degree.

1 While not required, EN.553.310 or EN.553.311 Probability and Statistics is highly recommended prior to enrolling in EN.580.475 and EN.580.477 Data Science and Laboratory.

2 At least four semesters of writing intensive courses and at least two semesters of a modern foreign language.