

BIOMEDICAL ENGINEERING, BACHELOR OF ARTS

Program Requirements

(See also General Requirements for Departmental Majors (<https://e-catalogue.jhu.edu/ksas-wse/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.

Code	Title	Credits
Basic Sciences		
AS.171.101 or AS.171.107	General Physics: Physical Science Major I General Physics for Physical Sciences Majors (AL)	4
AS.171.102 or AS.171.108	General Physics: Physical Science Major II General Physics for Physical Science Majors (AL)	4
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 ¹		
AS.110.108	Calculus I (Physical Sciences & Engineering)	4
AS.110.109	Calculus II (For Physical Sciences and Engineering)	4
AS.110.202 or AS.110.211	Calculus III Honors Multivariable Calculus	4
EN.553.291	Linear Algebra and Differential Equations	4
Computer Programming		
EN.500.112 or EN.500.113 or EN.500.114	Gateway Computing: JAVA Gateway Computing: Python Gateway Computing: Matlab	3
Humanities and Social Sciences		
	Select at least four humanities/social science courses that are also writing-intensive.	12
	Select four humanities/social science courses with at least nine credits chosen from one department, including at least one course at the 300-level or higher.	12
	Two foreign language courses are required and can be counted toward the humanities/social science requirement.	
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
EN.580.475	Biomedical Data Science	2
EN.580.477	Biomedical Data Science Laboratory	1
EN.580.485	Computational Medicine: Cardiology	2
EN.580.487	Computational Medicine: Cardiology Laboratory	1
	Select two of the following core electives:	6
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 with Laboratory	
EN.580.454	Methods in Nucleic Acid Sequencing Lab	
EN.580.494	Build an Imager	

Electives

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

¹ While not required, a course in Probability and Statistics (EN.553.211 Probability and Statistics for the Life Sciences or EN.553.311 Intermediate Probability and Statistics) is highly recommended prior to enrolling in EN.580.475 Biomedical Data Science and EN.580.477 Biomedical Data Science Laboratory.

Sample Program

First Year

First Semester	Credits	Second Semester	Credits
AS.030.101	3	AS.030.102	3
AS.030.105	1	AS.030.106	1
AS.110.108	4	AS.110.109	4
EN.580.111	2	EN.580.151	3
Humanities/Social Sciences	3	EN.580.153	1
Elective	2	Humanities/Social Sciences Elective	3
	15		15

Second Year

First Semester	Credits	Second Semester	Credits
AS.110.202	4	AS.171.101	4
AS.171.101	4	AS.173.112	1
AS.173.111	1	EN.500.112, 113, or 114	3
Humanities/Social Sciences	3	EN.553.291	4
Elective			
Elective	3	Humanities/Social Sciences Elective	3
	15		15

Third Year

First Semester	Credits	Second Semester	Credits
EN.580.221	4	EN.580.242	2
EN.580.241	2	EN.580.244	2
EN.580.243	2	EN.580.246	2
Language Elective	4	EN.580.248	2
Elective	3	Language Elective	4

	Elective	3
	15	15
Fourth Year		
First Semester	Credits	Second Semester Credits
EN.580.475	2 Core Elective 1	3
EN.580.477	1 Core Elective 2	3
EN.580.485	2 Elective	3
EN.580.487	1 Elective	3
Humanities/Social Sciences Elective	4 Elective	3
Elective	2	
Elective	3	
	15	15
Total Credits 120		