

BACHELOR OF SCIENCE WITH A MAJOR IN BIOMEDICAL ENGINEERING (STEM)

GW's bachelor of science in biomedical engineering program is an innovative field that takes advantage of the unique combination of resources and opportunities through connections with GW's School of Medicine and Health Sciences and the George Washington University Hospital. The program also has well-developed relationships with biotech industries and world-class laboratories in the DC metropolitan area. Biomedical engineering students can choose from a broad range of disciplines such as biomechanics, electrical engineering, physiology, biology, and biotechnology. Students graduate well-prepared with what they learn in the classroom as well as in specialty laboratories, internships, and the program's design seminar. Whether their career aspirations are to be a doctor, researcher, or clinician, or to work as a business partner to develop related technologies, the biomedical engineering degree prepares its students for the future.

Double major

SEAS and non-SEAS students interested in pursuing the BS in biomedical engineering as a double major should see Double Major under SEAS Regulations (<https://bulletin.gwu.edu/engineering-applied-science/#seasregulationstext>) in this Bulletin.

This is a STEM designated program.

Visit the program website (<http://www.bme.seas.gwu.edu/programs-degrees/>) for additional information.

ADMISSIONS

For more information on the admission process, please visit the Office of Undergraduate Admissions website. Applications may be submitted via the Common Application.

Supporting documents not submitted online should be mailed to:
Office of Undergraduate Admissions
The George Washington University
800 21st Street NW, Suite 100
Washington DC 20052

Contact for questions:
gwadm@gwu.edu or 202-994-6040

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
First semester		
BISC 1111	Introductory Biology: Cells and Molecules	
BME 1010	Introduction to Biomedical Engineering	

CHEM 1111	General Chemistry I ^{1,2}
or CHEM 1113	General Chemistry for Engineers
MATH 1231	Single-Variable Calculus I ¹
SEAS 1001	Engineering Orientation
UW 1020	University Writing ¹
Second semester	
BISC 1112	Introductory Biology: The Biology of Organisms
BME 1020	Introduction to Biomedical Engineering ¹
CHEM 1112	General Chemistry II ^{1,2}
	or an elective, which can be any course offered by GW.
MATH 1232	Single-Variable Calculus II ¹
PHYS 1025	University Physics I with Biological Applications ¹
Third semester	
APSC 2113	Engineering Analysis I
BME 2810	Biomedical Engineering Seminar I
ECE 2110	Circuit Theory
MATH 2233	Multivariable Calculus ¹
PHYS 1026	University Physics II with Biological Applications ¹
Fourth semester	
BME 2815	Biomedical Engineering Seminar II
	Programming elective I ³
	Restricted engineering elective ⁴
	Restricted engineering elective ⁴
	Humanities, social science, or non-technical elective ⁵
	Humanities, social science, or non-technical elective ⁵
Fifth semester	
BME 2210	Biomedical signals and systems ⁶
	or technical elective ⁷
BME 3820	Engineering Analysis of Neural, Muscular, and Cardiovascular Physiology
BME 3825	Medical Measurement Laboratory

BME 3910	Capstone Design Preparation
BME 4820	Anatomy and Physiology for Engineers
Programming elective ³	
Technical elective ⁷	
Sixth semester	
APSC 3115	Engineering Analysis III
BME 3915W	Biomedical Engineering Capstone Project Lab I
ECE 2210	Circuits, Signals, and Systems
or technical elective	
Humanities, social science, or non-technical elective ⁵	
Technical elective ⁷	
Technical elective ⁷	
Seventh semester	
BME 4920W	Biomedical Engineering Capstone Project Lab II
PHYS 3127	Biophysics: Macroscopic Physics in the Life Sciences
Humanities, social science, or non-technical elective ⁵	
ECE 3220	Introduction to Digital Signal Processing ⁶
or technical elective ⁷	
BME elective ⁸	
Eighth semester	
BME 4925W	Biomedical Engineering Capstone Project Lab III
PHIL 2135	Ethics in Business and the Professions
Humanities, social science, or non-technical elective ⁵	
Science elective ⁹	
Technical elective ⁷	

¹Course satisfies the University General Education Requirement (<https://bulletin.gwu.edu/university-regulations/general-education/>) in math, science, and writing.

²Students take either CHEM 1111 in the first semester and CHEM 1112 in the second semester; or CHEM 1113 in the first semester and an elective in the second semester.

³One pair of programming electives selected from the following:

Code	Title	Credits
CSCI 1111	Introduction to Software Development	
or CSCI 1112	Algorithms and Data Structures	
ECE 1120	C Programming for Electrical and Computer Engineering	
or ECE 1125	Data Structures and Algorithms for ECE	
MAE 1117	Introduction to Engineering Computations	
or MAE 2117	Engineering Computations	

⁴Two restricted engineering electives. Potential selections include:

Code	Title	Credits
APSC 2057	Analytical Mechanics I	
APSC 2058	Analytical Mechanics II	
CE 2220	Introduction to the Mechanics of Solids	
ECE 2115	Engineering Electronics	
ECE 2140	Design of Logic Systems	
ECE 3310	Introduction to Electromagnetics	
MAE 2131	Thermodynamics	

⁵At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (<https://bulletin.gwu.edu/university-regulations/general-education/>); the remaining course must be selected from either the University General Education Requirement list or the SEAS Humanities, Social Science, and Non-Technical Elective Requirement list (<https://www.seas.gwu.edu/humanities-and-social-science-requirement/>). At least one humanities course must be selected from the University General Education Requirement list; the remaining two courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list.

⁶Student must take one of the following two options:

- BME 2210 and an engineering technical elective (cannot be ECE 2210 or ECE 3220)
- or ECE 2210 (spring) and ECE 3220 (fall)

⁷All technical electives must be approved by the academic advisor and must include at least four courses approved by the advisor as having engineering content.

⁸BME course taken at the 3000 or 4000 level.

⁹One science elective selected from the following:

Code	Title	Credits
CHEM 3165	Biochemistry I	
PHYS 3128	Biophysics: Microscopic Physics in the Life Sciences	

Corrections: Updated coursework in semesters 5 through 8 that was not in sync with SEAS advising materials. Footnotes were edited accordingly. September 29, 2025.

COMBINED PROGRAMS

Combined programs

- Dual Bachelor of Science with a major in biomedical engineering and Master of Science in the field of biomedical engineering (<https://bulletin.gwu.edu/engineering-applied-science/biomedical-engineering/combined-bs-ms-biomedical-engineering/>)
- Dual Bachelor of Science with a major in biomedical engineering and Master of Science in the field of computer science (<https://bulletin.gwu.edu/engineering-applied-science/biomedical-engineering/combined-bs-biomedical-engineering-ms-computer-science/>)