

BACHELOR OF SCIENCE WITH A MAJOR IN BIOPHYSICS (STEM)

Understanding life processes can be approached through a quantitative study of protein networks and the interactions between individual molecules. The bachelor of science in biophysics emphasizes the connections between physics and biology and gives students the tools they need to understand life processes from a new perspective. Coursework covers a wide range of topics in mathematics and science, from biosynthesis and DNA structure to radiation biology and computer programming.

This is a STEM designated program.

Visit the program website (<https://physics.columbian.gwu.edu/bs-biophysics/>) for additional information.

ADMISSIONS

For information about the admission process, including deadlines, visit the Office of Undergraduate Admissions website (<https://undergraduate.admissions.gwu.edu/>). Applications can be submitted via the Common Application (<https://go.gwu.edu/commonapp/>).

Supporting documents not submitted online should be mailed to:

Office of Undergraduate Admissions
The George Washington University
800 21st St NW Suite 100
Washington, DC 20052

For questions visit undergraduate.admissions.gwu.edu/contact-us (<http://undergraduate.admissions.gwu.edu/contact-us/>).

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (<https://bulletin.gwu.edu/arts-sciences/#degreeregulationstext>).

Program-specific curriculum:

Code	Title	Credits
Required		
Introductory courses (48 credits):		
APSC 3115	Engineering Analysis III	
or STAT 1127	Statistics for the Biological Sciences	
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
CHEM 1111	General Chemistry I	

CHEM 1112	General Chemistry II
CSCI 1012	Introduction to Programming with Python
or MAE 1117	Introduction to Engineering Computations
MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
MATH 2184	Linear Algebra I
MATH 2233	Multivariable Calculus
MATH 3342	Ordinary Differential Equations
PHYS 1025	University Physics I with Biological Applications
or PHYS 1021	University Physics I
PHYS 1026	University Physics II with Biological Applications
or PHYS 1022	University Physics II
PHYS 2023	Modern Physics

Code	Title	Credits
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Additional courses (9 credits):

BISC 3209	Molecular Biology
or BISC 3261	Introductory Medical Biochemistry
or CHEM 3165	Biochemistry I
CHEM 2151	Organic Chemistry I
CHEM 2152	Organic Chemistry II

Advanced courses (25 credits):

PHYS 2151	Intermediate Laboratory I: Techniques and Methods
or PHYS 2151W	Intermediate Laboratory I: Techniques and Methods
PHYS 3127	Biophysics: Macroscopic Physics in the Life Sciences
PHYS 3128	Biophysics: Microscopic Physics in the Life Sciences
PHYS 3161	Mechanics
PHYS 3164	Thermal and Statistical Physics
PHYS 3165	Electromagnetic Theory I
PHYS 4195	Physics Capstone

or PHYS 4195W Physics Capstone

One course (3 credits) selected from the following:

PHYS 4196 Undergraduate Research in Biophysics

or PHYS 4197 Undergraduate Research in Nuclear Physics

or ASTR 4195 Undergraduate Research in Astrophysics

PHYS 4200 Physics Symposium

GENERAL EDUCATION

In addition to the University General Education Requirement (<https://bulletin.gwu.edu/university-regulations/general-education/>), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication (G-PAC) (<https://advising.columbian.gwu.edu/general-education-curriculum-gpac/>) as well as the course CCAS 1001 First-Year Experience. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

Coursework (<https://bulletin.gwu.edu/university-regulations/general-education/#generaleducationtext>) for the University General Education Requirement is distributed as follows:

- One course in critical thinking in the humanities.
- Two courses in critical thinking, quantitative reasoning, or scientific reasoning in the social sciences.
- One course that has an approved oral communication component.
- One course in quantitative reasoning (must be in mathematics or statistics).
- One course in scientific reasoning (must be in natural and/or physical laboratory sciences).
- UW 1020 University Writing
- After successful completion of UW 1020, 6 credits distributed over at least two writing in the discipline (WID) courses taken in separate semesters. WID courses are designated by a "W" appended to the course number.

Coursework for the CCAS G-PAC requirement is distributed as follows:

- Arts—one approved arts course that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.

- Global or cross-cultural perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Local or civic engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or physical science—one additional approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Humanities—one additional approved humanities course that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- CCAS 1001 First-Year Experience

Certain courses are approved to fulfill GPAC requirements in more than one category.

Courses taken in fulfillment of G-PAC requirements can also be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University can count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

Lists of approved courses in the above categories are included on each undergraduate major's (<https://bulletin.gwu.edu/arts-sciences/#majorstext>) page in this Bulletin.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must submit for departmental approval an honors thesis based on a two-semester research project. In addition, the student must have a cumulative grade-point average of at least 3.5 in physics courses and 3.5 overall.