BACHELOR OF SCIENCE WITH A MAJOR IN BIOPHYSICS

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.

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 (http://bulletin.gwu.edu/arts-sciences/#degreeregulationtext).

Program-specific curriculum:

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credits</th>
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<td>Required</td>
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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

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:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>PHYS 4196</td>
<td>Undergraduate Research in Biophysics</td>
</tr>
<tr>
<td>or PHYS 4197</td>
<td>Undergraduate Research in Nuclear Physics</td>
</tr>
<tr>
<td>or ASTR 4195</td>
<td>Undergraduate Research in Astrophysics</td>
</tr>
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</table>

PHYS 4200 Physics Symposium

**GENERAL EDUCATION**

In addition to the University General Education Requirement (http://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 (http://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 (https://bulletin.gwu.edu/search/?P=UW%201020) University Writing (4 credits).
- 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).

**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.