Biophysics

Biophysics is a quantitative science at the intersection of the life and physical sciences. It requires a significant level of competence in physics, chemistry, biology and math as reflected in the concentration requirements. Students should work with their concentration advisor to develop a focused academic plan that complements the required research component of the concentration and allows students to develop analytical and quantitative skills.

Student Goals:

- Explore the relationship between biological and physical principles by successfully completing foundational courses in biology, physics, math and chemistry
- Gain an in-depth knowledge of the interdisciplinary nature of life and physical sciences by selecting and successfully completing advanced courses in biology, physics, math, chemistry or related fields
- Develop skills to identify and analyze critical questions central to biophysics
- Apply quantitative methods to problems at the interface of life and physical sciences
- Complete a research project with a faculty advisor that focuses on a particular theme or problem in the field of biophysics where students apply knowledge gained throughout the curriculum.

Additional detailed information about the field of Biophysics may be found at: https://www.brown.edu/academics/biology/undergraduate-education/undergraduate/biophysics/

Standard program for the Sc.B. degree

Requirements

<table>
<thead>
<tr>
<th>Subject</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>Physics</td>
<td>PHYS 0030 &amp; PHYS 0040</td>
<td>Basic Physics A and Basic Physics B</td>
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<tr>
<td>Chemistry</td>
<td>CHEM 0330</td>
<td>Equilibrium, Rate, and Structure</td>
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<tr>
<td>Chemistry</td>
<td>CHEM 0350</td>
<td>Organic Chemistry I</td>
<td>1</td>
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<tr>
<td>Math</td>
<td>MATH 0090</td>
<td>Single Variable Calculus, Part I (or equivalent)</td>
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<tr>
<td>Math</td>
<td>MATH 0100</td>
<td>Single Variable Calculus, Part II (or equivalent)</td>
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<td>Math</td>
<td>MATH 0180</td>
<td>Multivariable Calculus (or equivalent)</td>
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<td>Biology</td>
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<td>The Foundation of Living Systems (or equivalent)</td>
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<td>Biology</td>
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Directed Research: Students must take two semesters of research which may be satisfied by any of the opportunities listed below:

- Directed Research in Biology (BIOL 1950/BIOL 1960), Chemistry (CHEM 0970/CHEM 0980), or Physics (PHYS 1980)

COEX courses

- A summer research experience in equivalent scope and scale to an independent study, but this would not count as course credit toward the concentration

Electives: Four electives in biology, physics, math/applied math, chemistry, neuroscience, engineering or computer science; at least 2 courses must be above the introductory level

Total Credits: 20

1 The PHYS 0050/0060 or 0070/0160 sequences are preferred to PHYS 0030/0040.

2 Sample electives can be found on the Biology Undergraduate Education page (https://www.brown.edu/academics/biology/undergraduate-education/undergraduate/biophysics/).