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:
Students in this concentration will:

- 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 (https://www.brown.edu/academics/biology/undergraduate-education/undergraduate/biophysics/)

Standard program for the Sc.B. degree

Requirements

Physics		
One of the following series:		2
PHYS 0030 & PHYS 0040	Basic Physics A and Basic Physics B [1]	
PHYS 0050 & PHYS 0060	Foundations of Mechanics and Foundations of Electromagnetism and Modern Physics	
PHYS 0070 & PHYS 0160	Analytical Mechanics and Introduction to Relativity, Waves and Quantum Physics	
PHYS 0470	Electricity and Magnetism	1
Chemisty		
CHEM 0330	Equilibrium, Rate, and Structure	1
CHEM 0350	Organic Chemistry I	1
Select one other advanced Chemistry Course		1
Math		
MATH 0090	Single Variable Calculus, Part I (or equivalent)	1
MATH 0100	Single Variable Calculus, Part II (or equivalent)	1
MATH 0180	Multivariable Calculus (or equivalent)	1
Biology		
BIOL 0200	The Foundation of Living Systems (or equivalent)	1
Select four additional biology or neuroscience courses chosen with approval of the advisor.		4
Directed Research: Students must take two semesters of research which may be satisfied by any of the opportunities listed below:		**2**
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 [2]		**4**
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/).