

# BIOPHYSICS, MINOR

Bridging the biological sciences and the physical sciences, Biophysics is concerned with physical and chemical explanations of living processes, especially at the cellular and molecular levels. Detailed molecular descriptions are emerging for genetic elements and for the mechanisms that control their propagation and expression. Biophysical studies include the investigation of protein structure, nucleic acid structure, enzyme mechanisms, the phenomena underlying cellular behavior, excitable phenomena in nerve, muscle and visual cells, and integrative neural phenomena.

**For more information:** <http://www.physics.upenn.edu/biophysics/biophpages/Minor.html>

The degree and major requirements displayed are intended as a guide for students entering in the Fall of 2020 and later. Students should consult with their academic program regarding final certifications and requirements for graduation.

Code	Title	Course Units
<b>Minor Requirements</b>		
<i>Cell Biology</i>		
BIOL 205	Cell Biology	1.0
<i>Biophysics</i>		
PHYS 280 or BCHE 280	Physical Models of Biological Systems Physical Models of Biological Systems	1
<i>Chemistry</i>		
CHEM 101 or CHEM 115	General Chemistry I Honors Chemistry I	1
CHEM 102 or CHEM 116	General Chemistry II Honors Chemistry II	1
CHEM 053 & CHEM 054 or CHEM 245	General Chemistry Laboratory I and General Chemistry Laboratory II Experimental Organic Chemistry	1
<i>Math</i>		
MATH 104	Calculus, Part I	1
Select one of the following:		1
MATH 114	Calculus, Part II	
MATH 115	Calculus, Part II with Probability and Matrices	
MATH 116	Honors Calculus	
MATH 240 or MATH 260	Calculus, Part III Honors Calculus, Part II	1
<i>Physics</i>		
Select one of the following Options:		3
Option 1:		
PHYS 150 or PHYS 170	Principles of Physics I: Mechanics and Wave Motion Honors Physics I: Mechanics and Wave Motion	
PHYS 151 or PHYS 171	Principles of Physics II: Electromagnetism and Radiation Honors Physics II: Electromagnetism and Radiation	
Option 2:		
PHYS 140	Principles of Physics I (without laboratory)	
PHYS 141	Principles of Physics II (without laboratory)	
PHYS 364	Laboratory Electronics	
Total Course Units		11