

BIOPHYSICS, BA

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 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.

The minimum total course units (<https://www.college.upenn.edu/credits-needed-major/>) for graduation in this major is 36. Double majors may entail more course units.

Note: Though not a requirement of the major, participation in an independent research project is strongly encouraged.

For more information: <https://www.physics.upenn.edu/biophysics/>

For information about the General Education requirements, please visit the College of Arts & Sciences Curriculum (<https://www.college.upenn.edu/curriculum/>) page.

Code	Title	Course Units
College General Education Requirements and Free Electives		
Foundational Approaches + Sectors ¹ + Free Electives		16
Major Requirements		
<i>Cell Biology and Biochemistry</i>		
BIOL 204	Biochemistry	1
or CHEM 251	Principles of Biological Chemistry	
BIOL 205	Cell Biology	1
<i>Biophysics</i>		
PHYS 280	Physical Models of Biological Systems	1
or BCHE 280	Physical Models of Biological Systems	
Select 1 course unit or two .5 course units of electives		1
<i>Chemistry</i>		
CHEM 101	General Chemistry I	1
or CHEM 115	Honors Chemistry I	
CHEM 102	General Chemistry II	1
or CHEM 116	Honors Chemistry II	
CHEM 053 & CHEM 054	General Chemistry Laboratory I and General Chemistry Laboratory II	1
or CHEM 245	Experimental Organic Chemistry	
CHEM 241	Principles of Organic Chemistry	1
CHEM 242	Principles of Organic Chemistry II	1
or CHEM 243	Organic Chemistry II: Principles of Org Chem with applications in Chem Biology	
Select one of the following:		2
CHEM 221 & CHEM 222	Physical Chemistry I and Physical Chemistry II	
OR		

PHYS 230 & PHYS 240 Principles of Physics III: Thermal Physics and Waves and Principles of Physics IV: Modern Physics (without laboratory)

or PHYS 250 Principles of Physics IV: Modern Physics

<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	Calculus, Part III	1
or MATH 260	Honors Calculus, Part II	
MATH 241	Calculus, Part IV	1
<i>Physics</i>		
PHYS 150	Principles of Physics I: Mechanics and Wave Motion	1.5
or PHYS 170	Honors Physics I: Mechanics and Wave Motion	
Select one of the following:		1.5
PHYS 151	Principles of Physics II: Electromagnetism and Radiation	
or PHYS 171	Honors Physics II: Electromagnetism and Radiation	
PHYS 093 & PHYS 094 & PHYS 364	and Laboratory Electronics	
PHYS 361	Electromagnetism I: Electricity and Potential Theory	1
or PHYS 561	Electromagnetism I	
PHYS 362	Electromagnetism II: Magnetism, Maxwell's Equations, and Electromagnetic Waves	1
or PHYS 562	Electromagnetism II: Magnetism, Maxwell's Equations, and Electromagnetic Waves	
Total Course Units		36

¹ You may count no more than one course toward both a Major and a Sector requirement. For Exceptions, check the Policy Statement (<http://www.college.upenn.edu/sectors-policy/>).

Honors

Applicant must have a minimum GPA of 3.3 in the major. Thesis required.

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.