

BIOCHEMISTRY, BA

Contemporary biological sciences are based on principles of chemistry and physics. The importance of this relationship is the basis of the Penn Biochemistry major, which prepares students for advanced study in areas as diverse as biophysics, biotechnology, cell biology, genetic engineering, genomics, molecular biology, molecular genetics, nanotechnology, neurobiology, structural biology, systems biology, and biochemistry. The major provides the basic science background for graduate and health professional schools and for prospective science teachers.

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

For more information: <https://biochemistry.sas.upenn.edu>

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 + Free Electives		18
<i>Calculus Requirement</i> ⁺		
MATH 1400	Calculus, Part I	1
or MATH 1610	Honors Calculus	
MATH 1410	Calculus, Part II	1
or MATH 2600	Honors Calculus, Part II	
<i>Chemistry Requirement</i>		
General Chemistry:		
CHEM 1012	General Chemistry I [*]	1
or CHEM 1151	Honors Chemistry I	
or CHEM 1011	Introduction to General Chemistry I	
CHEM 1022	General Chemistry II [*]	1
or CHEM 1161	Honors Chemistry II	
or CHEM 1021	Introduction to General Chemistry II	
General Chemistry Laboratories:		
CHEM 1101	General Chemistry Laboratory I	1
& CHEM 1102	and General Chemistry Laboratory II	
Organic Chemistry Requirement		
CHEM 2411	Principles of Organic Chemistry I with Laboratory	1.5
CHEM 2421	Principles of Organic Chemistry II with Laboratory	1.5
Physical Chemistry Requirements		
CHEM 2210	Physical Chemistry I (Fall Only)	1
CHEM 2220	Physical Chemistry II (Spring Only)	1
Biological Chemistry Requirements		
CHEM 2510	Principles of Biological Chemistry ¹	1
CHEM 5510	Biological Chemistry I (Fall Only)	1
CHEM 5520	Biological Chemistry II (Spring Only)	1
<i>Physics Requirement</i>		
PHYS 0150	Principles of Physics I: Mechanics and Wave Motion	1.5

or PHYS 0170	Honors Physics I: Mechanics and Wave Motion	
PHYS 0151	Principles of Physics II: Electromagnetism and Radiation	1.5
or PHYS 0171	Honors Physics II: Electromagnetism and Radiation	
<i>Research Requirement</i>		
BCHE 4597	Biochemistry Laboratory ²	2
Total Course Units		36

+ Students should complete 2 semesters of MATH at Penn.

* CHEM 1011 and CHEM 1021 are not recommended for Biochemistry majors and will only be considered in special circumstances. Students should consult with a Biochemistry program chair prior to taking these courses if planning on the major.

¹ Take before end of fourth semester. Take after CHEM 2411 Principles of Organic Chemistry I with Laboratory but BEFORE CHEM 5510 Biological Chemistry I.

² Year four, fall and spring terms. Mentored research with host principal investigator.

Honors

Requirements: GPA of 3.2 in courses required for the major, taken at Penn, and not including BCHE 4597 Biochemistry Laboratory.

The degree and major requirements displayed are intended as a guide for students entering in the Fall of 2024 and later. Students should consult with their academic program regarding final certifications and requirements for graduation.