MAJOR IN BIOPHYSICS

Requirements

(Beginning Spring 2025)

The#Biophysics major is designed for students with an interest in physics and its applications in biological systems. The program provides students#with a strong foundation in physics along with the advanced coursework in chemistry and biology necessary for employment or postgraduate study in biophysics and related fields such as medical physics and biomedical engineering.

All Biophysics majors take a core set of physics courses, including a three-course sequence in fundamental classical physics and courses in computational methods, modern physics, and laboratory techniques. Students will be assigned an adviser in the Department of Physics, Astronomy, and Geosciences who will assist them in selecting elective courses within their program to best meet their career goals.

Code	Title	Units
Required Physics Courses		
PHYS 185	INTRODUCTORY SEMINAR IN PHYSICS	1
PHYS 241	GENERAL PHYSICS I CALCULUS-BASED A grade of B or better in PHYS 211 is required to substitute for PHYS 241	4
or PHYS 211	GENERAL PHYSICS I; NON CALCULUS-BASED	
PHYS 242	GENERAL PHYSICS II CALCULUS-BASED	4
PHYS 243	GENERAL PHYSICS III	4
PHYS 305	COMPUTERS IN PHYSICS	4
PHYS 311	MODERN PHYSICS I	3
PHYS 320	BIOPHYSICS	3
PHYS 341	INTERMEDIATE PHYSICS LABORATORY	3
PHYS 385	PHYSICS SEMINAR	1
PHYS 486	PHYSICS SEMINAR II	1
Required non-Physics courses		
MATH 273	CALCULUS I	4
MATH 274	CALCULUS II	4
CHEM 131 & 131L	GENERAL CHEMISTRY I LECTURE and GENERAL CHEMISTRY I LABORATORY	4
CHEM 132 & 132L	GENERAL CHEMISTRY II LECTURE and GENERAL CHEMISTRY II LABORATORY	4
CHEM 333 & 333L	ESSENTIALS OF ORGANIC CHEM [LECTURE] and ESSENTIALS OF ORGANIC CHEMISTRY LABORATORY	5-8
or CHEM 334 & CHEM 336 & CHEM 337	ORGANIC CHEMISTRY I [LECTURE] and INTRODUCTORY ORGANIC CHEMISTRY LABORATORY and ORGANIC CHEMISTRY II [LECTURE]	
CHEM 351	BIOCHEMISTRY	3
CHEM 356	BIOCHEMISTRY LAB	2
BIOL 200 & 200L	BIOLOGY I: INTRODUCTION TO CELLULAR BIOLOGY AND GENETICS [LECTURE] and BIOLOGY I: INTRODUCTION TO CELLULAR BIOLOGY AND GENETICS [LAB] [1]	4
BIOL 206 & 206L	BIOLOGY II: INTRODUCTION TO ECOLOGY AND EVOLUTION [LECTURE] and BIOLOGY II: INTRODUCTION TO ECOLOGY AND EVOLUTION [LAB]	4
BIOL 309	GENETICS	4
BIOL 408	CELL BIOLOGY	4
Upper-level electives in PHYS, CHEM, BIOL, or MATH		12
Total Units		**82-85**

[1] Students may substitute BIOL 191/BIOL 191L for BIOL 200/BIOL 200L if an A- or better is earned in each course component.

Four-Year Plan of Study

Sample Four-Year Plan

The selected course sequence below is an example of the simplest path to degree completion. Based on course schedules, student needs, and student choice, individual plans may vary. Students should consult with their adviser to make the most appropriate elective choices and to ensure that they have completed the required number of units (120) to graduate.

Freshman

Term 1	Units	Term 2	Units
PHYS 185	1	PHYS 241 (Core 7)	4
CHEM 131 & 131L	4	MATH 274	4
BIOL 200 & 200L	4	BIOL 206 & 206L	4
MATH 273 (Core 3)	4	Core 2 (or Core 1)	3
Core 1 (or Core 2)	3		
	16		**15**

Sophomore

Term 1	Units	Term 2	Units
PHYS 242 (Core 8)	4	PHYS 243	4
PHYS 305	4	CHEM 333 & 333L	5
CHEM 132 & 132L	4	Core 4	3
Elective	4	Core 5	3
	16		**15**

Junior

Term 1	Units	Term 2	Units
PHYS 311	3	PHYS 385	1
PHYS 341	3	PHYS 320	3
BIOL 309	4	CHEM 356	2
CHEM 351	3	Elective	3
Core 6	3	Core 9	3
		Core 10	3
	16		**15**

Senior

Term 1	Units	Term 2	Units
PHYS 486	1	Elective	3
BIOL 408	4	Elective	4
Elective	3	Core 13	3

Core 11	3 Core 14	3
Core 12	3	
	14	**13**

Total Units 120

Learning Outcomes

Students in the Biophysics program will be able to:

1. Demonstrate an understanding of fundamental principles of physics and major concepts and be able to apply these principles to solve quantitative problems.
2. Communicate scientific information effectively in both oral and written formats.
3. Demonstrate an understanding of the interdisciplinary nature of scientific research and theory as they apply to the fields of biology, chemistry, and physics.