

# 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
<b>Required Physics Courses</b>		
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 I	3
PHYS 385	PHYSICS SEMINAR	1
PHYS 486	PHYSICS SEMINAR II	1
<b>Required non-Physics courses</b>		
MATH 273	CALCULUS I	4
MATH 274	CALCULUS II	4
CHEM 131	GENERAL CHEMISTRY I LECTURE	3
CHEM 131L	GENERAL CHEMISTRY I LABORATORY	1
CHEM 132	GENERAL CHEMISTRY II LECTURE	3
CHEM 132L	GENERAL CHEMISTRY II LABORATORY	1
CHEM 333	ESSENTIALS OF ORGANIC CHEM [LECTURE]	3
CHEM 333L	ESSENTIALS OF ORGANIC CHEMISTRY LABORATORY	2
CHEM 351	BIOCHEMISTRY	3
CHEM 356	BIOCHEMISTRY LAB	2
BIOL 200	BIOLOGY I: INTRODUCTION TO CELLULAR BIOLOGY AND GENETICS [LECTURE]	3
BIOL 200L	BIOLOGY I: INTRODUCTION TO CELLULAR BIOLOGY AND GENETICS [LAB]	1
BIOL 206	BIOLOGY II: INTRODUCTION TO ECOLOGY AND EVOLUTION [LECTURE]	3
BIOL 206L	BIOLOGY II: INTRODUCTION TO ECOLOGY AND EVOLUTION [LAB]	1
BIOL 309	GENETICS	4

BIOL 408	CELL BIOLOGY	4
Upper-level electives in PHYS, CHEM, BIOL, or MATH		12
<b>Total Units</b>		<b>82</b>

## 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	
		<b>16</b>	<b>15</b>

#### 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
		<b>16</b>	<b>15</b>

#### 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
		<b>16</b>	<b>15</b>

#### 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	
		<b>14</b>	<b>13</b>

**Total Units 120**

## Learning Outcomes

Students in the Biophysics program will be able to:

2 Major in Biophysics

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.