

ADVANCED BIOPHYSICS OPTION

This option is offered within the following major(s):

- Biochemistry and Biophysics - College of Science (<http://catalog.oregonstate.edu/college-departments/science/school-life-sciences/biochemistry-biophysics/biochemistry-biophysics-bs-hbs>)

The Advanced Biophysics Option is designed for students interested in pursuing graduate work in biophysics or entering the workforce in biophysics and pharmaceutical industries. It provides advanced training in physical chemistry and physics, bioinformatics, statistics, mathematics, and other areas of current research in biophysics, in addition to the core courses in the major. Students are strongly encouraged to participate in undergraduate research, and up to three research credits can be applied to the Upper-Division Science Elective requirements. Faculty advisors work with students to help them identify electives, research opportunities, and professional internships that align with their interests.

Option Code: 927

Options in the Biochemistry and Biophysics major require a minimum of twenty-one credits to complete in addition to the Biochemistry and Biophysics major. Most students can complete the major and Advanced Biophysics option requirements in four years.

Students may pursue either the Advanced Biophysics, Neuroscience, or Pre-medicine/Biochemistry and Biophysics option with the Biochemistry and Biophysics major-- no dual combinations are permitted.

For further information, see MyDegrees or the Department of Biochemistry and Biophysics (<https://biochem.science.oregonstate.edu>) website (<https://biochem.science.oregonstate.edu>).

Code	Title	Hours
Option Core		
Select one of the following for six credits:		6
CH 441 & CH 442	PHYSICAL CHEMISTRY and PHYSICAL CHEMISTRY	
PH 423 & PH 425	PARADIGMS IN PHYSICS: ENERGY AND ENTROPY and PARADIGMS IN PHYSICS: QUANTUM FUNDAMENTALS	
Electives		
Select a minimum of 15 credits from the following:		15
BB 401	UNDERGRADUATE RESEARCH (1-3 credits allowed with approval of the Lead Advisor)	
BB 485	APPLIED BIOINFORMATICS	
BOT 460 or BOT 476	FUNCTIONAL GENOMICS INTRODUCTION TO COMPUTING IN THE LIFE SCIENCES	
CS 161	INTRODUCTION TO COMPUTER SCIENCE I	
MTH 256 or MTH 253 or MTH 264	APPLIED DIFFERENTIAL EQUATIONS INFINITE SERIES AND SEQUENCES INTRODUCTION TO MATRIX ALGEBRA	
PH 591	BIOLOGICAL PHYSICS	
ST 352 or ST 411 & ST 412	INTRODUCTION TO STATISTICAL METHODS ¹ METHODS OF DATA ANALYSIS and METHODS OF DATA ANALYSIS	
Total Hours		21

¹ Alternate series is ST 351, ST 411, and ST 412

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Course	Title	Hours
First Year		
Fall		
BB 111	INTRODUCTION TO BIOCHEMISTRY AND BIOPHYSICS RESEARCH	1
CH 231	GENERAL CHEMISTRY	4
CH 261	*LABORATORY FOR CHEMISTRY 231	1
MTH 251	*DIFFERENTIAL CALCULUS	4
COMM 111 or COMM 114 or COMM 218	*PUBLIC SPEAKING or *ARGUMENT AND CRITICAL DISCOURSE or *INTERPERSONAL COMMUNICATION	3
Bacc Core or Elective		3
Hours		16
Winter		
CH 232	GENERAL CHEMISTRY	4
CH 262	*LABORATORY FOR CHEMISTRY 232	1
MTH 252	INTEGRAL CALCULUS	4
WR 121	*ENGLISH COMPOSITION	3
Bacc Core or Elective		3
Hours		15
Spring		
CH 233	GENERAL CHEMISTRY	4
CH 263	*LABORATORY FOR CHEMISTRY 233	1
HHS 231	*LIFETIME FITNESS FOR HEALTH	2
PAC XXX	*Physical Activity Class	1
MTH 254	VECTOR CALCULUS I	4
Bacc Core or Elective		3
Hours		15
Second Year		
Fall		
BI 211	*PRINCIPLES OF BIOLOGY	4
CH 334	ORGANIC CHEMISTRY	3
PH 211	*GENERAL PHYSICS WITH CALCULUS	4
Bacc Core Course or Elective		4
Hours		15
Winter		
BI 212	*PRINCIPLES OF BIOLOGY	4
CH 335	ORGANIC CHEMISTRY	3
PH 212	*GENERAL PHYSICS WITH CALCULUS	4
Options Course		4
Hours		15
Spring		
BI 213	*PRINCIPLES OF BIOLOGY	4
CH 336	ORGANIC CHEMISTRY	3
PH 213	*GENERAL PHYSICS WITH CALCULUS	4
Bacc Core Course or Elective		4
Hours		15
Third Year		
Fall		
BB 345	INTRODUCTION TO BIOLOGICAL SEQUENCE ANALYSIS	2
BB 490	BIOCHEMISTRY 1: STRUCTURE AND FUNCTION	3
CH 361	EXPERIMENTAL CHEMISTRY I	3
CH 440	PHYSICAL CHEMISTRY	3
Option Course		4
Hours		15
Winter		
BB 317	*SCIENTIFIC THEORY AND PRACTICE	3
BB 491	BIOCHEMISTRY 2: METABOLISM	3
CH 362	EXPERIMENTAL CHEMISTRY I	3
CH 441	PHYSICAL CHEMISTRY	3

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Bacc Core or Elective Course		3
Hours		15
Spring		
BB 314	CELL AND MOLECULAR BIOLOGY	4
BB 492	BIOCHEMISTRY 3: GENETIC BIOCHEMISTRY	3
CH 442	PHYSICAL CHEMISTRY	3
ST 351	INTRODUCTION TO STATISTICAL METHODS	4
Option		3
Hours		17
Fourth Year		
Fall		
BB 481	MACROMOLECULAR STRUCTURE	3
BB 493	BIOCHEMISTRY LABORATORY MOLECULAR TECHNIQUES 1	3
Option		4
Bacc Core Course or Elective Course		6
Hours		16
Winter		
BB 482	BIOPHYSICS	3
BB 494	BIOCHEMISTRY LABORATORY MOLECULAR TECHNIQUES 2	3
BB 498	ASBMB CERTIFICATION EXAM	0
Electives		8
Hours		14
Spring		
BB 483	ADVANCED BIOCHEMISTRY AND BIOPHYSICS: CAPSTONE	3
Bacc Core Course or Electives		12
Hours		15
Total Hours		183