

Program Progression Guide

Disclaimer: The [2018-2019 Purdue West Lafayette catalog](#) is considered the source for academic and programmatic requirements for students entering programs during the Fall 2018, Spring 2019, and Summer 2019 semesters. The Program Progression Guide assists students in the development of an individualized 8-semester plan. Students are encouraged to use this guide, myPurduePlan* (online degree auditing tool) and the Student Educational Planner (SEP) as they work with their academic advisor towards the completion of their degree requirements.

Notification: Each student is ultimately responsible for knowing, monitoring and completing all degree requirements.

An undergraduate degree in the College of Science requires completion of the following degree requirements.

University Degree Requirements		
Minimum 2.0 Cumulative GPA	Minimum 120 Credits that fulfill degree requirements	32 Residency Credits (30000 and above) at a Purdue University campus
University Core Curriculum**		
<ul style="list-style-type: none"> Human Cultures: Behavioral/Social Science Human Cultures: Humanities Information Literacy Oral Communication <p>University Core Curriculum Course Listing</p>	<ul style="list-style-type: none"> Quantitative Reasoning Science Science, Technology & Society Selective Written Communication 	
Required Major Program Courses		
Minimum 2.0 cumulative GPA in all biology courses required for this major. A minimum of 32 credits at or above the 300-level completed at a Purdue campus. At least one 500-level Biology course other than BIOL 54200.		
College of Science Core Curriculum		
<ul style="list-style-type: none"> Freshman Composition – 3 credits Technical Writing and Presentation - 3 credits Teaming & Collaboration (NC) General Education - 9 credits 	<ul style="list-style-type: none"> Foreign Language & Culture – 9 credits Great Issues - 3 credits Laboratory Science - 8 credits Multidisciplinary - 3 credits 	<ul style="list-style-type: none"> Mathematics - 6-10 credits Statistics - 3 credits Computing - 3 credits
Degree Electives		
Any Purdue or transfer course approved to meet degree requirements in accordance with individual departmental policies. Consult the No Count course list for courses, which may not be used to meet any College of Science degree requirement.		

* This audit is not your academic transcript and it is not official notification of completion of degree or certificate requirements.

** University Core Curriculum Outcomes may be met through completion of the College of Science Core curriculum. Students should consult with their academic advisors and myPurdue Plan for course selections.

2018-19 Biochemistry Degree Progression Guide

The Biology Department has *suggested* the following degree progression guide for the Biochemistry Degree. Students will work with their academic advisors to determine their best path to degree completion. Course pre-requisites are specific to this degree plan.

Credit	Fall 1st Year	Prerequisite	Credit	Spring 1st Year	Prerequisite
2	BIOL 12100		3	BIOL 13100	
2	BIOL 13500	CHM 12901 co-req	4	Organic Chem I Selective	CHM 11600 or 12901
5	CHM 12901	ALEKS 85	4-5	Calculus II Selective	Calculus I
4-5	Calculus I Selective		3	Language/Culture II Selective	Lang 10100
3	Language/Culture I Selective		3-4	ENGL 10600 or 10800	
1	Elective (BIOL 11500 pref)				
17-18			17-19		

Credit	Fall 2nd Year	Prerequisite	Credit	Spring 2nd Year	Prerequisite
3	BIOL 23100	CHM 12901 co-req; BIOL 13100	3	BIOL 24100	BIOL 23100
2	BIOL 23200		2	BIOL 24200	
4	Organic Chem II Selective	Organic I	4	PHYS I Selective	
3	Language/Culture III Selective	Varies	2	BIOL 28600	BIOL 12100
3	Free Elective		1	Free Elective (BIOL 29300 pref)	
			3	General Education I Selective	
15			15		

Credit	Fall 3rd Year	Prerequisite	Credit	Spring 3rd Year	Prerequisite
3	BCHM 56100	Organic II lecture	3	BCHM 56200	
3	BIOL 39500	BIOL 23100 & 24100	3-4	Computer Science Selective	
4	PHY 2 Selective		3	BIOL 41500	
3	General Education II Selective		1	Free Elective (BIOL 39300 pref)	
3	COM 21700		3	General Education III Selective	
			1	Free Elective	
16			16		

Credit	Fall 4th Year	Prerequisite	Credit	Spring 4th Year	Prerequisite
3	BIOL 42000		4	Physical Chemistry Selective	Varies
3	BIOL 59500		3	STAT 50300	
3-4	Analytical Chemistry Selective		3	Great Issues Selective	
1-3	Multidisciplinary Selective		2-4	Base Lab Requirement	
2-3	Biology Selective		2	Free Elective	
12-16			14-16		

Courses in () are recommended.

College of Science Core Curriculum (SCC)

- | | |
|---------------------------------------|-----------------------|
| A. Freshman Composition | G. Laboratory Science |
| B. Technical Writing and Presentation | H. Multidisciplinary |
| C. Teaming and Collaboration | I. Mathematics |
| D. General Education | J. Statistics |
| E. Foreign Language and Culture | K. Computing |
| F. Great Issues | |

* Consult the University Core Requirement course list for approved courses.

BIOCHEMISTRY

Fall 2018

Graduation Requirements:

- A minimum 2.0 average in all biology courses required for this major
- A minimum of 32 credits at or above the 300-level completed at a Purdue campus
- At least one 500-level Biology course other than BIOL 54200
- 120 Total Credits

BIOLOGY:

1. BIOL 12100 Biology I: Diversity, Ecology and Behavior (2 cr.; fall) **or**
BIOL 19500 Biodiversity, Ecology & Evolution (3 cr.; fall)
2. BIOL 13100 Biology II: Development, Structure, and Function of Organisms (3 cr.; spring) **or**
BIOL 19500 Organismal Development & Physiology (3 cr.; spring)
3. BIOL 13500 1st Year Biology Lab (2 cr.; both) **or**
BIOL 14501 1st Year Biology Lab w/Neuro Research Project (2 cr.; fall) **or**
IT 22600 Biotechnology Lab (2 cr.; fall)
4. BIOL 23100 Biology III: Cell Structure and Function (3 cr.; fall)
5. BIOL 23200 Laboratory in Biology III: Cell Structure and Function (2 cr.; fall)
6. BIOL 24100 Biology IV: Genetics and Molecular Biology (3 cr.; spring)
7. BIOL 24200 Laboratory in Genetics and Molecular Biology (2 cr.; spring)
8. BIOL 28600 Intro. to Ecology & Evolution (2 cr.; spring)
9. **Intermediate Requirement:** Choose one of these eight options:
(Biochemistry majors must choose BIOL 39500, Macromolecules)
 - A. BIOL 32800 Principles of Physiology (4 cr.; spring)
 - B. BIOL 36700 Principles of Development (2 cr.; spring) **plus** BIOL 36701 Principles of Development Laboratory (1 cr.; spring)
 - C. **BIOL 39500 Macromolecules** (3 cr.; fall)
 - D. BIOL 41500 Intro. to Molecular Biology (3 cr.; spring)
 - E. BIOL 41600 Viruses & Viral Diseases (3 cr.; spring)
 - F. BIOL 42000 Eukaryotic Cell Biology (3 cr.; fall)
 - G. BIOL 43600 Neurobiology (3 cr.; fall)
 - H. BIOL 43800 General Microbiology (3 cr.; fall)
10. BIOL 41500 Intro. to Molecular Biology (3 cr.; spring)
11. BIOL 42000 Eukaryotic Cell Biology (3 cr.; fall)
12. BIOL 59500 Methods & Measurement in Physical Biochemistry (3 cr.; fall)
13. **Biology Selective:** One of these courses:
 - A. BIOL 41600 Viruses and Viral Diseases (3 cr.; spring)
 - B. BIOL 43800 General Microbiology (3 cr.; fall)
 - C. BIOL 47800¹ Intro to Bioinformatics (3 cr.; fall)
 - D. BIOL 48100 Eukaryotic Genetics (3 cr.; spring)
 - E. BIOL 51100 Intro to X-Ray Crystal (3 cr.; spring)
 - F. BIOL 51700 Molecular Biology of Proteins (2 cr.; spring)
 - G. BIOL 52900 Bacterial Physiology (3 cr.; spring)
 - H. BIOL 53700 Immunology (3 cr.; spring)
 - I. BIOL 53800 Molecular, Cellular & Developmental Neurobiology (3 cr.; spring)
 - J. BIOL 54100 Molecular Genetics of Bacteria (3 cr.; fall)
 - K. BIOL 55001 Eukaryotic Molecular Biology (3 cr.; fall)
 - L. BIOL 59500 Epigenetics in Human Disease (3 cr.; fall)
 - M. BIOL 59500 Genetics Omics Host Microbe (3 cr.; fall)
 - N. BIOL 59500² Theory of Molecular Methods (3 cr.; fall)
14. **Base Lab Requirement:** Must meet Base Lab requirement as described below
15. BCHM 56100 General Biochemistry I (3 cr.; fall)
16. BCHM 56200 General Biochemistry II (3 cr.; spring)

Base Laboratory Requirement for all Biology Majors

1. Each student will satisfy each of the following three learning objectives:
Objective 1 – Research planning, literature review, and writing
Objective 2 – Observation, experimentation
Objective 3 – Analysis, simulation, and presentation

(continued on back)

¹ This course may count for the Biology Selective and as the College of Science Multidisciplinary requirement.

² This course may NOT count for the Biology Selective and toward the Base Laboratory Requirement. It can only be used for one requirement.

Other Biochemistry requirements and the extra requirements for the Biochemistry Honors Curriculum are on the back of this page.

2. Objectives may be met by taking courses according the following chart:

Courses	Title	Objective 1	Objective 2	Objective 3
BIOL 43900	Microbiology Lab	X	X	X
BIOL 44201	Protein Expression		X	X
BIOL 44202	Animal Physiology		X	X
BIOL 44205	LabView		X	X
BIOL 44207	Protein Structure		X	
BIOL 44211	Anatomy & Physiology		X	
BIOL 44212	Microscopy & Cell Bio		X	X
BIOL 44215	Physiology Measurements	X		X
BIOL 54200	Neurophysiology		X	X
BIOL 59100	Field Ecology	X	X	X
BIOL 59500	CryoEM 3D Reconstruction		X	X
BIOL 59500	Data Analysis in Neurosci			X
BIOL 59500	Ecological Statistics	X		X
BIOL 59500 ²	Theory of Molecular Methods	X		X
BIOL 59500	Neural Mech in Hlth Disease	X		X

3. Students who successfully complete a Biology Honors Research Thesis have successfully met all three objectives.
 4. Undergraduate Research may be used to meet these objectives. Student must get Research Mentor approval for each objective after that objective is completed. Student must also earn at least four credits of BIOL 49400 or 49900 research. Consult with your academic advisor for the forms used to obtain Research Mentor for each objective.
 5. A combination of courses and research may be used to meet this requirement.

CHEMISTRY

- General Chemistry:**
 - CHM 12901 General Chemistry with a Biological Focus (5 cr.; fall)
- Organic Chemistry Selectives: One of these two options:**
 - CHM 25500 Organic Chemistry (3 cr.; both) and CHM 25501 Organic Chemistry Lab (1 cr.; both) and CHM 25600 Organic Chemistry (3 cr.; both) and CHM 25601 Organic Chemistry Lab (1 cr.; both)
 - CHM 26505 Organic Chemistry (3 cr.; fall) and CHM 26300 Organic Chemistry Lab (1 cr.; fall) and CHM 26605 Organic Chemistry (3 cr.; spring) and CHM 26400 Organic Chemistry Lab (1 cr.; spring)
- Analytical Chemistry Selective:** BCHM 22100 Analytical Biochemistry (3 cr.; both) or CHM 32100 Analytical Chemistry (4 cr.; spr.)
- Physical Chemistry Selective: One of these two options:**
 - CHM 37200 Physical Chemistry (4 cr.; spring)
 - CHM 37300 Physical Chemistry (3 cr.; fall) and CHM 37400 Physical Chemistry (3 cr.; spring)

MATH: For the Biochemistry Major, you must choose one of the following calculus sequences: MA 16100-16200 or MA 16500-16600.

PHYSICS Selectives: One of these two options:

- PHYS 23300 Physics for Life Sciences (4 cr.; both) and PHYS 23400 Physics for Life Sciences (4 cr.; both)
- PHYS 17200 Modern Mechanics (4 cr.; both) and one of the following two choices:
 - PHYS 27200 Electric and Magnetic Interactions (4 cr.; both) or
 - PHYS 24100 Electricity and Optics (3 cr.; both) and PHYS 24200 Intro to Heat and Thermal Physics (1 cr.; spring) and PHYS 25200 Electricity and Optics Laboratory (1 cr.; spring)

COLLEGE OF SCIENCE CORE REQUIREMENTS

Composition and Presentation; Teambuilding and Collaboration; Language and Culture; Great Issues; General Education; Multidisciplinary Experience; Mathematics; Statistics; Computing (see handout).

FREE ELECTIVES

Approximately 0 - 10 credits

BIOCHEMISTRY HONORS CURRICULUM

A 3.0 or higher graduation index is required to graduate in the Biochemistry Honors Curriculum.

In addition to the requirements listed for the Biochemistry program, at least two of the following courses/course sequences must be completed when fulfilling other requirements:

- CHM 32100 Analytical Chemistry (4 cr.; fall)
- CHM 37300 Physical Chemistry (3 cr.; fall) and CHM 374 Physical Chemistry (4 cr.; spring)
- PHYS 17200 Modern Mechanics (4 cr.; both) and one of the following two choices:
 - PHYS 27200 Electric and Magnetic Interactions (4 cr.; both) or
 - PHYS 24100 Electricity and Optics (3 cr.; both) and PHYS 25200 Electricity and Optics Laboratory (1 cr.; spring)