

BIOLOGY

(for students entering Biology in Fall 2012 or later – revised July 2013)

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**
BIOL 14502 1st Year Biology Lab w/Micro Research Project (2 cr.; spring) **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:**
 - A. BIOL 32800¹ Principles of Physiology (4 cr.; spring)
 - B. BIOL 36600¹ Principles of Development (3 cr.; spring)
 - C. BIOL 39500¹ Macromolecules (3 cr.; fall)
 - D. BIOL 41500¹ Intro. to Molecular Biology (3 cr.; fall)
 - E. BIOL 41600¹ Viruses & Viral Diseases (3 cr.; spring)
 - F. BIOL 42000¹ Eukaryotic Cell Biology (3 cr.; fall)
 - G. BIOL 43600¹ Neurobiology (3 cr.; fall)
 - H. BIOL 43800¹ General Microbiology (3 cr.; fall)
10. **Biology Electives: Twelve credits** from the following: must choose at least **one** from each of Groups A and B, and at least **one** course from the Laboratory list below.

Group A:

BIOL 39500 ¹	Macromolecules (3 cr.; fall)	BIOL 51700	Molecular Biology: Proteins (2 cr.; spring)
BIOL 41500 ¹	Intro. to Molecular Biology (3 cr.; fall)	BIOL 52900	Bacterial Physiology (3 cr.; spring)
BIOL 41600 ¹	Viruses and Viral Diseases (3 cr.; spring)	BIOL 53300	Medical Microbiology (3 cr.; fall)
BIOL 42000 ¹	Eukaryotic Cell Biology (3 cr.; fall)	BIOL 53800	Molecular, Cellular & Developmental Neurobiology (3 cr.; spring)
BIOL 43600 ¹	Neurobiology (3 cr.; fall)	BIOL 54100	Molecular Genetics of Bacteria (3 cr.; fall)
BIOL 43800 ¹	General Microbiology (3 cr.; fall)	BIOL 54900	Microbial Ecology (2 cr.; alternate spring)
BIOL 43900	Microbiology Lab (2 cr.; fall)	BIOL 56200	Neural Systems (3 cr.; spring)
BIOL 44400	Human Genetics (3 cr.; fall)	BIOL 59500	Protein Bioinformatics (2 cr.; spring)
BIOL 44600	Molecular Biology of Pathogens (3 cr.; spring)	BIOL 59500	Methods & Measurement in Physical Biochemistry (3 cr.; fall)
BIOL 47800	Intro to Bioinformatics (3 cr.; fall)	BIOL 59500	Neural Mechanisms in Health & Disease (3 cr.; fall)
BIOL 48100	Eukaryotic Genetics (3 cr.; spring)	BIOL 59500	Cellular Biology of Plants (3 cr.; fall)
BIOL 49500	Biological & Structural Aspects of Drug Design & Action (3 cr.; spring)	BIOL 59500	Practical Biocomputing (3 cr.; spring)
BIOL 51100	Intro. to X-Ray Crystallography (3 cr.; spring)	BCHM 56100 ²	General Biochemistry I (3 cr.; fall)
BIOL 51600	Molecular Biology of Cancer (3 cr.; spring)	BCHM 56200	General Biochemistry II (3 cr.; spring)
		CHM 53300 ²	Introductory Biochemistry (3 cr.; fall)

Group B:

BIOL 30100 ³	Human Anatomy & Physiology (3 cr.; fall)	BIOL 58500	Ecology (3 cr.; spring)
BIOL 30200 ³	Human Anatomy & Physiology (3 cr.; spring)	BIOL 58705	Animal Communication (3 cr.; alternate fall)
BIOL 32800 ¹	Principles of Physiology (4 cr.; spring)	BIOL 59100	Field Ecology (4 cr.; alternate fall)
BIOL 36600 ¹	Principles of Development (3 cr.; spring)	BIOL 59200	Evolution of Behavior (3 cr.; alternate spring)
BIOL 43200	Reproductive Physiology (3 cr.; Alternate fall)	BIOL 59500	Ecological Statistics (3 cr.; fall)
BIOL 48300	Environmental & Conservation Biology (3 cr.; spring)	BIOL 59500	Sensory Ecology (3 cr.; alternate spring)
BIOL 53700	Immunology (3 cr.; spring)	BIOL 59900	Quantitative Physiology (3 cr.; spring)
BIOL 55900	Endocrinology (3 cr.; fall)	HORT 30100	Plant Physiology (4 cr.; fall)
BIOL 58000	Evolution (3 cr.; fall)		

Laboratory: Choose one option:

BIOL 43900	Microbiology Lab (2 cr.; fall)	BIOL 44201	Protein Expression (2 cr.; both) and at least one additional credit of BIOL 442xx (1-2 cr.; both) (various titles) or 54200 Neurophysiology (1 cr.; fall)
BIOL 59100	Field Ecology (4 cr.; alternate fall)		

Research (49400 or 49900), (max of 3 credits) will count toward the 12 credits but will not count toward the Group A or B or the laboratory requirement.

¹ Courses listed for the Intermediate Requirement may satisfy #9 above **or** count as part of the 12 credit requirement (#10), but not both.

² BCHM 56100 or CHM 53300 may count as a chemistry elective or as a biology elective but not both.

³ If **both** BIOL 30100 & 30200 are completed, **one** of the two courses will count toward 12 credit biology elective requirement. The other course will count as free elective. If **only** BIOL 30100 **or** 30200 is completed, the credits will count **only** as free elective credit.

Other requirements are on the back of this page.

CHEMISTRY

1. CHM 11500 General Chemistry (4 cr.; both)
2. CHM 11600 General Chemistry (4 cr.; both)
3. One of these three options:
 - A. 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)
 - B. 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)
 - C. CHM 25700 Organic Chemistry (4 cr.; both) and CHM 25701 Organic Chemistry Lab (1 cr.; both) and one of:
CHM 33300 Principles of Biochemistry (3 cr.; both) or BCHM 30700 Biochemistry (3 cr.; both)
4. One of these eight options:
 - A. BCHM 22100 Analytical Biochemistry (3 cr.; both)
 - B. CHM 22400 Introductory Quantitative Analysis (4 cr.; spring)
 - C. CHM 32100 Analytical Chemistry I (4 cr.; fall)
 - D. BCHM 56100² General Biochemistry I (3 cr.; fall)
 - E. CHM 49000 Biochemistry for Life Sciences (3 cr.; fall)
 - F. CHM 53300² Introductory Biochemistry (3 cr.; fall)
 - G. CHM 37200 Physical Chemistry (4 cr.; spring)
 - H. CHM 37300 Physical Chemistry (3 cr.; fall)

PHYSICS

One of these two options:

1. PHYS 22000 General Physics (4 cr.; both) and PHYS 22100 General Physics (4 cr.; both)
2. PHYS 17200 Modern Mechanics (4 cr.; both) and one of the following two choices:
 - A. PHYS 27200 Electric and Magnetic Interactions (4 cr.; both) or
 - B. PHYS 24100 Electricity and Optics (3 cr.; both) 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 0-20 credits