

NEUROBIOLOGY AND PHYSIOLOGY

(for students entering Biology in Fall 2012 or later – revised May 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 Introduction to Ecology and Evolution (2 cr.; spring)
9. Intermediate Requirement: Choose one of these eight options:
(Neurobiology and Physiology majors must choose BIOL 32800, Principles of Physiology)
 - A. BIOL 32800 Principles of Physiology (4 cr.; spring)
 - B. BIOL 36600 Principles of Development (3 cr.; spring)
 - C. BIOL 39500 Macromolecules (3 cr.; fall)
 - D. BIOL 41500 Intro. to Molecular Biology (3 cr.; fall)
 - 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. Two of these seven courses:
 - A. BIOL 43200 Reproductive Physiology (3 cr.; alt fall)
 - B. BIOL 43600 Neurobiology (3 cr.; fall)
 - C. BIOL 53800 Molecular, Cellular & Developmental Neurobiology (3 cr.; spring)
 - D. BIOL 55900 Endocrinology (3 cr.; fall)
 - E. BIOL 56200 Neural Systems (3 cr.; spring)
 - F. BIOL 59500 Neural Mechanisms in Health & Disease (3 cr.; fall)
 - G. BIOL 59900 Quantitative Physiology (3 cr.; spring)
11. One of these five courses:
 - A. BCHM 56100 General Biochem (3 cr.; fall)
 - B. CHM 37200 Physical Chemistry (4 cr.; spring)
 - C. CHM 37300 Physical Chemistry (3 cr.; fall)
 - D. CHM 49000 Biochemistry for Life Sciences (3 cr.; fall)
 - E. CHM 53300 Introductory Biochemistry (3 cr.; fall)
12. BIOL 44202¹ Animal Physiology Laboratory (2 cr.; fall) **or** BIOL 44215¹ Multidisciplinary Design of Systems & Devices for Physiology Measurements (2 cr.; fall) **or** BIOL 54200¹ Laboratory in Neurophysiology (1 cr.; fall)
13. Two additional modules of BIOL 442xx¹ (1-2 cr.; both) (various titles) **or** 54200¹ Neurophysiology (1 cr.; fall)
14. **Biology Electives: Three credits of the following in addition to the above requirements:**

BIOL 30100 ² Human Anatomy & Physiology (3 cr.; fall)	BIOL 53700 Immunology (3 cr.; spring)
BIOL 30200 ² Human Anatomy & Physiology (3 cr.; spring)	BIOL 53800 Molecular, Cellular & Developmental Neurobiology (3 cr.; spring)
BIOL 36600 Principles of Development (3 cr.; spring)	BIOL 54100 Molecular Genetics of Bacteria (3 cr.; fall)
BIOL 41500 Intro. to Molecular Biology (3 cr.; fall)	BIOL 54900 Microbial Ecology (2 cr.; alternate spring)
BIOL 41600 Viruses and Viral Diseases (3 cr.; spring)	BIOL 55900 Endocrinology (3 cr.; fall)
BIOL 42000 Eukaryotic Cell Biology (3 cr.; fall)	BIOL 56200 Neural Systems (3 cr.; spring)
BIOL 43800 General Microbiology (3 cr.; fall)	BIOL 58000 Evolution (3 cr.; fall)
BIOL 43900 Microbiology Lab (2 cr.; fall)	BIOL 58500 Ecology (3 cr.; spring)
BIOL 44400 Human Genetics (3 cr.; fall)	BIOL 58705 Animal Communication (3 cr.; alternate fall)
BIOL 44600 Molecular Biology of Pathogens (3 cr.; spring)	BIOL 59100 Field Ecology (4 cr.; alternate fall)
BIOL 47800 Intro to Bioinformatics (3 cr.; fall)	BIOL 59200 Evolution of Behavior (3 cr.; alternate spring)
BIOL 48100 Eukaryotic Genetics (3 cr.; spring)	BIOL 59500 Cellular Biology of Plants (3 cr.; fall)
BIOL 48300 Environmental & Conservation Biology (3 cr.; spring)	BIOL 59500 Ecological Statistics (3 cr.; fall)
BIOL 49500 Biological & Structural Aspects of Drug Design & Action (3 cr.; spring)	BIOL 59500 Methods & Measurement in Physical Biochemistry (3 cr.; fall)
BIOL 43200 Reproductive Physiology (3 cr.; alternate fall)	BIOL 59500 Neural Mechanisms in Health & Disease (3 cr.; fall)
BIOL 43600 Intro. to Neurobiology (3 cr.; fall)	BIOL 59500 Protein Bioinformatics (2 cr.; spring)
BIOL 51100 Intro. to X-Ray Crystallography (3 cr.; spring)	BIOL 59500 Sensory Ecology (3 cr.; alternate spring)
BIOL 51600 Molecular Biology of Cancer (3 cr.; spring)	BIOL 59900 Quantitative Physiology (3 cr.; spring)
BIOL 51700 Molecular Biology: Proteins (2 cr.; spring)	BCHM 56200 General Biochemistry II (3 cr.; spring)
BIOL 52900 Bacterial Physiology (3 cr.; spring)	
BIOL 53300 Medical Microbiology (3 cr.; fall)	

¹ Three credits of research, approved by the Undergraduate Studies Committee, may replace some or all of these modules.

² If **both** BIOL 30100 & 30200 are completed, **three** of the six credits will complete the three credit biology elective requirement. The other three credits will count as free electives. If **only** BIOL 30100 **or** 30200 is completed, the credits will count **only** as free elective credit.

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)

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 - 19 credits