

NEUROBIOLOGY AND PHYSIOLOGY

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 Introduction to Ecology and Evolution (2 cr.; spring)
9. **Intermediate Biology Selective:** 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 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.; 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. **Neurobiology & Physiology Selective:** Two of these seven courses¹:
 - 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 59500 Neurobiology of Learning & Memory (3 cr.; fall)
11. **Chemistry Selective:** 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 33900⁴ Biochemistry : A Molecular Approach (3 cr.; spring)
 - E. CHM 53300 Introductory Biochemistry (3 cr.; fall)
12. **Neurobiology & Physiology Lab Selective** BIOL 44202² Animal Physiology Laboratory (2 cr.; fall) **or** BIOL 44215² Multidisciplinary Design of Systems & Devices for Physiology Measurements (2 cr.; fall) **or** BIOL 54200² Laboratory in Neurophysiology (1 cr.; fall)
13. **Biology Lab Selectives:** Two additional modules of BIOL 442xx² (1-2 cr.; both) (various titles) **or** 54200² Neurophysiology (1 cr.; fall)
14. **Biology Selective:** Three credits of the following in addition to the above requirements¹:

BIOL 30100 ³ Human Anatomy & Physiology (3 cr.; fall) BIOL 30200 ³ Human Anatomy & Physiology (3 cr.; spring) BIOL 36700 Principles of Development (2 cr.; spring) BIOL 36701 Lab in Principles of Development (1 cr.; spring) BIOL 41500 Intro. to Molecular Biology (3 cr.; fall) BIOL 41600 Viruses and Viral Diseases (3 cr.; spring) BIOL 42000 Eukaryotic Cell Biology (3 cr.; fall) BIOL 43200 Reproductive Physiology (3 cr.; alternate fall) BIOL 43600 Intro. to Neurobiology (3 cr.; fall) BIOL 43800 General Microbiology (3 cr.; fall) BIOL 43900 Microbiology Lab (2 cr.; fall) BIOL 44400 Human Genetics (3 cr.; fall) BIOL 44600 Molecular Biology of Pathogens (3 cr.; spring) BIOL 47800 Intro to Bioinformatics (3 cr.; fall) BIOL 48100 Eukaryotic Genetics (3 cr.; spring) BIOL 48300 Environmental & Conservation Biology (3 cr.; spring) BIOL 49500 Biological & Structural Aspects of Drug Design & Action (3 cr.; spring) BIOL 51100 Intro. to X-Ray Crystallography (3 cr.; spring) BIOL 51600 Molecular Biology of Cancer (3 cr.; spring) BIOL 51700 Molecular Biology: Proteins (2 cr.; spring) BIOL 52900 Bacterial Physiology (3 cr.; spring) BIOL 53300 Medical Microbiology (3 cr.; fall) BIOL 53700 Immunology (3 cr.; spring)	BIOL 53800 Molecular, Cellular & Developmental Neurobiology (3 cr.; spring) BIOL 54100 Molecular Genetics of Bacteria (3 cr.; fall) BIOL 54900 Microbial Ecology (2 cr.; alternate spring) BIOL 55001 Eukaryotic Molecular Biology (3 cr.; fall) BIOL 55900 Endocrinology (3 cr.; fall) BIOL 56200 Neural Systems (3 cr.; spring) BIOL 58000 Evolution (3 cr.; spring) BIOL 58500 Ecology (3 cr.; fall) BIOL 58705 Animal Communication (3 cr.; alternate fall) BIOL 59100 Field Ecology (4 cr.; alternate fall) BIOL 59200 Evolution of Behavior (3 cr.; alternate spring) BIOL 59500 Cellular Biology of Plants (3 cr.; alternate fall) BIOL 59500 Ecological Statistics (3 cr.; fall) BIOL 59500 Epigenetics in Human Disease (3 cr.; fall) BIOL 59500 Genetics and –Omics of Host-Microbe Interactions (3 cr.; fall) BIOL 59500 Methods & Measurement in Physical Biochemistry (3 cr.; fall) BIOL 59500 Neural Mechanisms in Health & Disease BIOL 59500 Neurobiology of Learning & Memory (3 cr.; fall) BIOL 59500 Sensory Ecology (3 cr.; alternate spring) BIOL 59500 Protein Bioinformatics (2 cr.; spring) BIOL 59500 Theory of Molecular Methods (3 cr.; fall)
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Footnotes and other requirements are on the back of this page

CHEMISTRY

1. **General Chemistry:**

A. CHM 12901⁴ General Chemistry with a Biological Focus (5 cr.; fall)

2. **Organic Chemistry Selectives: One of these two 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)

PHYSICS Selectives:

One of these two options:

1. PHYS 23300 Physics for Life Sciences I (4 cr.; both) **and** PHYS 23400 Physics for Life Sciences II (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)

UNIVERSITY CORE and 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 6-21 credits

¹ A 500-level BIOL course must be taken as part of requirement #10 or #13.

² Three credits of research, approved by the Undergraduate Studies Committee, may replace some or all of these modules.

³ If **both** BIOL 30100 & 30200 are completed, **three** of the six credits will satisfy the 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.

⁴ Students who select 12901 for General Chemistry must also select CHM 33900 **and** 33901 for the Chemistry Selective. Students who end up with Special Case approval for some other Gen Chem courses may choose the other Chem Selective options.
