**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)
2. BIOL 13100  Biology II: Development, Structure, and Function of Organisms  (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 19500  Year I Bio Lab: Disease Ecology  (2 cr.; alternate 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:
   - **(Genetics majors may not use BIOL 43800, General Microbiology, to satisfy this requirement)**
   - 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 44100  Senior Seminar in Genetics  (1 cr.; fall)
11. BIOL 48100  Eukaryotic Genetics  (3 cr.; spring)

12. **Chemistry Selective:** One of these three courses:
   - a. BCHM 56100  General Biochemistry I  (3 cr.; fall) **or**
   - b. CHM 33900  Biochemistry: A Molecular Approach  (3 cr.; Spring) **or**
   - c. CHM 53300  Introductory Biochemistry  (3 cr.; fall)

13. **Lab Requirement:** Must meet Base Lab requirement as described on the back of this page.

14. **Biology Selectives:** Six credits of the following. One of the two courses must be a 500 level Biology:
   - BIOL 43800  General Microbiology  (3 cr.; fall)
   - BIOL 44400  Human Genetics  (3 cr.; fall)
   - BIOL 47800  Intro to Bioinformatics  (3 cr.; fall)
   - BIOL 51600  Molecular Genetics of Cancer  (3 cr.; spring)
   - BIOL 54100  Molecular Genetics of Bacteria  (3 cr.; alternate fall)
   - BIOL 55001  Eukaryotic Molecular Biology  (3 cr.; fall)
   - BIOL 58000  Evolution  (3 cr.; spring)
   - BIOL 59500  Epigenetics in Human Disease  (3 cr.; fall)
   - BIOL 59500  Genetics and –Omnics of Host-Microbe Interactions  (3 cr.; alternate fall)
   - BIOL 59500  Theory of Molecular Methods  (3 cr.; fall)
   - AGRY 53000  Plant Genetics  (3 cr.; fall)
   - ANSC 51100  Population Genetics  (3 cr.; fall)

### CHEMISTRY

1. **General Chemistry:**
   - CHM 12901  General Chemistry with a Biological Focus  (5 cr.; fall)

2. **Organic Chemistry Selectives:** One of these two options:
   - 1. CHM 25500  Organic Chemistry  (3 cr.; both) **and** CHM 25501  Organic Chemistry Lab  (1 cr.; both)
   - 2. CHM 26505  Organic Chemistry  (3 cr.; fall) **and** CHM 26300  Organic Chemistry Lab  (1 cr.; fall)

### 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 24100  Electricity and Optics  (3 cr.; both) **and** PHYS 25200  Electricity and Optics Laboratory  (1 cr.; spring)

**Footnotes and other requirements are on the back of this page.**
**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

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

<table>
<thead>
<tr>
<th>Courses</th>
<th>Title</th>
<th>Objective 1</th>
<th>Objective 2</th>
<th>Objective 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOL 43900</td>
<td>Microbiology Lab</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>BIOL 44201</td>
<td>Protein Expression</td>
<td>X</td>
<td>X</td>
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<tr>
<td>BIOL 44202</td>
<td>Animal Physiology</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>BIOL 44205</td>
<td>LabView</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>BIOL 44207</td>
<td>Protein Structure</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL 44211</td>
<td>Anatomy &amp; Physiology</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>BIOL 44212</td>
<td>Microscopy &amp; Cell Bio</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>BIOL 44215</td>
<td>Physiology Measurements</td>
<td>X</td>
<td></td>
<td>X</td>
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<tr>
<td>BIOL 54200</td>
<td>Neurophysiology</td>
<td>X</td>
<td>X</td>
<td></td>
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<tr>
<td>BIOL 58210</td>
<td>Ecological Statistics</td>
<td>X</td>
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<td>X</td>
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<tr>
<td>BIOL 59100</td>
<td>Field Ecology</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>BIOL 59500</td>
<td>CryoEM 3D Reconstruction</td>
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<td>X</td>
<td>X</td>
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<tr>
<td>BIOL 59500</td>
<td>Data Analysis in Neurosci</td>
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<td></td>
<td>X</td>
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<tr>
<td>BIOL 59500</td>
<td>Theory of Molecular Methods</td>
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<td></td>
<td>X</td>
</tr>
<tr>
<td>BIOL 59500</td>
<td>Neural Mech in Hlth Disease</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

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. Students must get Research Mentor approval for each objective after that objective is completed. Students 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.

**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 13-23 credits

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1. This course may count as the Intermediate Biology Selective and as the College of Science Teambuilding and Collaboration requirement.

2. Students who select 12901 for General Chemistry must take CHM 33900 and 33901. Students who end up with Special Case approval for some other Gen Chem courses may choose the other Chem Selective options. Credit is not allowed for both BIOL 44201 and CHM 33901.

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