# 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.

<table>
<thead>
<tr>
<th>University Degree Requirements</th>
<th>University Core Curriculum**</th>
<th>Required Major Program Courses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum 2.0 Cumulative GPA</td>
<td>Minimum 120 Credits that fulfill degree requirements</td>
<td>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.</td>
</tr>
<tr>
<td>Minimum 120 Credits that fulfill degree requirements</td>
<td>32 Residency Credits (30000 and above) at a Purdue University campus</td>
<td>** 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.</td>
</tr>
<tr>
<td>32 Residency Credits (30000 and above) at a Purdue University campus</td>
<td>** 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.</td>
<td></td>
</tr>
</tbody>
</table>

### University Core Curriculum

- Human Cultures: Behavioral/Social Science
- Human Cultures: Humanities
- Information Literacy
- Oral Communication
- 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

- Freshman Composition – 3 credits
- Technical Writing and Presentation - 3 credits
- Teaming & Collaboration (NC)
- General Education - 9 credits
- Foreign Language & Culture – 9 credits
- Great Issues - 3 credits
- Laboratory Science - 8 credits
- Mathematics - 6-10 credits
- Multidisciplinary - 3 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.
The Biology Department has suggested the following degree progression guide for the Health & Disease 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.

<table>
<thead>
<tr>
<th>Credit</th>
<th>Fall 1st Year</th>
<th>Prerequisite</th>
<th>Credit</th>
<th>Spring 1st Year</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>BIOL 12100</td>
<td></td>
<td>3</td>
<td>BIOL 13100</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>BIOL 13500</td>
<td>CHM 12901 co-req</td>
<td>4</td>
<td>Organic Chem I Selective</td>
<td>CHM 11600 or 12901</td>
</tr>
<tr>
<td>5</td>
<td>CHM 12901</td>
<td>ALEKS 85</td>
<td>3-5</td>
<td>Calculus II Selective</td>
<td>Calculus I</td>
</tr>
<tr>
<td>3-5</td>
<td>Calculus I Selective</td>
<td></td>
<td>3</td>
<td>Language/Culture II Selective</td>
<td>Lang 10100</td>
</tr>
<tr>
<td>3</td>
<td>Language/Culture I Selective</td>
<td></td>
<td>3-4</td>
<td>ENGL 10600 or 10800</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Elective (BIOL 11500 pref)</td>
<td></td>
<td></td>
<td>16-18</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Credit</th>
<th>Fall 2nd Year</th>
<th>Prerequisite</th>
<th>Credit</th>
<th>Spring 2nd Year</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>BIOL 23100</td>
<td>CHM 116 co-req; BIOL 13100</td>
<td>3</td>
<td>BIOL 24100</td>
<td>BIOL 23100</td>
</tr>
<tr>
<td>2</td>
<td>BIOL 23200</td>
<td></td>
<td>2</td>
<td>BIOL 24200</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Organic Chem II Selective</td>
<td>Organic I</td>
<td>3-4</td>
<td>Chemistry Selective</td>
<td>Organic II</td>
</tr>
<tr>
<td>3</td>
<td>Language/Culture III Selective</td>
<td>Varies</td>
<td>2</td>
<td>BIOL 28600</td>
<td>BIOL 12100</td>
</tr>
<tr>
<td>3</td>
<td>Free Elective</td>
<td></td>
<td>1</td>
<td>Free Elective (BIOL 29300 pref)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>General Education I Selective</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15</td>
<td>14-15</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Credit</th>
<th>Fall 3rd Year</th>
<th>Prerequisite</th>
<th>Credit</th>
<th>Spring 3rd Year</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>BIOL 30100</td>
<td>Varies</td>
<td>3</td>
<td>BIOL 30200</td>
<td></td>
</tr>
<tr>
<td>2-3</td>
<td>Biology Selective</td>
<td>Varies</td>
<td>4</td>
<td>PHYS 2 Selective</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>PHYS 1 Selective</td>
<td></td>
<td>3-4</td>
<td>Computer Science Selective</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>General Education II Selective</td>
<td></td>
<td>1</td>
<td>Free Elective (BIOL 39300 pref)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>COM 21700</td>
<td></td>
<td>3</td>
<td>General Education III Selective</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td>Free Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>14-15</td>
<td>17-18</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Credit</th>
<th>Fall 4th Year</th>
<th>Prerequisite</th>
<th>Credit</th>
<th>Spring 4th Year</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>BIOL 43800</td>
<td></td>
<td>2-3</td>
<td>500-Level Biology Selective</td>
<td>Varies</td>
</tr>
<tr>
<td>2</td>
<td>BIOL 43900</td>
<td></td>
<td>3</td>
<td>Health &amp; Disease Selective</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>STAT 50300</td>
<td></td>
<td>3</td>
<td>Great Issues Selective</td>
<td></td>
</tr>
<tr>
<td>1-3</td>
<td>Multidisciplinary Selective</td>
<td></td>
<td>3</td>
<td>Pre-professional Selective</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Free Elective</td>
<td></td>
<td>3</td>
<td>Free Elective</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>13-15</td>
<td>14-15</td>
<td></td>
</tr>
</tbody>
</table>

Courses in ( ) are recommended.

**College of Science Core Curriculum (SCC)**

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

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


**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 Biology Selective:** Choose one of these eight options:
   - 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 30100 Human Anatomy & Physiology (3 cr.; fall)
11. BIOL 30200 Human Anatomy & Physiology (3 cr.; spring)
12. **Lab Requirement:** BIOL 43900 Lab in Microbiology (2 cr.; fall)

13. **Health & Disease Selective:** One of these three courses:
   - A. BIOL 41600 Viruses & Viral Diseases (3 cr.; spring) or
   - B. BIOL 53700 Immunology (3 cr.; spring) or
   - C. BIOL 55900 Endocrinology (3 cr.; fall)

14. **Biology Selectives:** Six credits from the following:
   - BIOL 32800 Principles of Physiology (4 cr.; spring)
   - BIOL 36700 Principles of Development (2 cr.; spring)
   - BIOL 36701 Lab in Principles of Development (1 cr.; spring)
   - BIOL 39500 Macromolecules (3 cr.; fall)
   - BIOL 41500 Intro to Molecular Biology (3 cr.; spring)
   - BIOL 41600 Viruses & Viral Diseases (3 cr.; spring)
   - BIOL 42000 Eukaryotic Cell Biology (3 cr.; spring)
   - BIOL 43200 Reproductive Physiology (3 cr.; alternate fall)
   - BIOL 43600 Neurobiology (3 cr.; fall)
   - BIOL 442xx Modular Laboratory Courses (var titles) (1-2 cr.; both)
   - BIOL 44400 Human Genetics (3 cr.; fall)
   - BIOL 44600 Molecular Biology of Pathogens (3 cr.; spring)
   - BIOL 47804 Intro to Bioinformatics (3 cr.; fall)
   - BIOL 48100 Eukaryotic Genetics (3 cr.; spring)
   - BIOL 48300 Environmental & Conservation Biology (3 cr.; alternate 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 54200 Neurophysiology Lab (1 cr.; fall)
   - BIOL 54900 Microbial Ecology (2 cr.; alternate spring)
   - BIOL 55001 Eukaryotic Molecular Biology (3 cr.; fall)
   - BIOL 559002 Endocrinology (3 cr.; fall)
   - BIOL 55900 Endocrinology (3 cr.; fall)
   - BIOL 562004 Neural Systems (3 cr.; spring)
   - BIOL 56310 Protein Bioinformatics (2 cr.; spring)
   - BIOL 56800 Evolution (3 cr.; spring)
   - BIOL 568210 Evolutionary Statistics (3 cr.; fall)
   - 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 Epigenetics in Human Disease (3 cr.; fall)
   - BIOL 59500 Genetics & –Oomics of Host-Microbe Interaction (3 cr.; fall)
   - BIOL 59500 Methods & Measurement in Physical Biochemistry (3 cr.; fall)
   - BIOL 59500 Neural Mechanisms in Health & Disease (3 cr.; fall)
   - BIOL 59500 Neurobiology of Learning and Memory (3 cr.; fall)
   - BIOL 59500 Sensory Ecology (3 cr.; alternate spring)
   - BIOL 59500 Theory of Molecular Methods (3 cr.; fall)
   - HORT 30100 Plant Physiology (4 cr.; fall)

Research (49400 or 49900, maximum of 3 credits) will count toward the Biology Selective requirement.

Footnotes and other requirements are on the back of this page.
Base Laboratory Requirement for all Biology Majors (Health & Disease majors are required to take BIOL 43900 to satisfy this)

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 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>
</tr>
<tr>
<td>BIOL 44201</td>
<td>Protein Expression</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>BIOL 44202</td>
<td>Animal Physiology</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>BIOL 44205</td>
<td>LabView</td>
<td></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>BIOL 44207</td>
<td>Protein Structure</td>
<td></td>
<td></td>
<td>X</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></td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>BIOL 44215</td>
<td>Physiology Measurements</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>BIOL 54200</td>
<td>Neurophysiology</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>BIOL 58210</td>
<td>Ecological Statistics</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>BIOL 59100</td>
<td>Field Ecology</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>BIOL 59500</td>
<td>Data Analysis in Neurosci</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL 59500</td>
<td>Theory of Molecular Methods</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BIOL 59500</td>
<td>Neural Mech in Hlth Disease</td>
<td>X</td>
<td>X</td>
<td></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. 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**

1. **General Chemistry:**
   - CHM 12901\(^1\) 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)
3. **Chemistry Selectives:** (must choose one of the following options)
   - A. Analytical Chemistry: BCHM 22100 Analytical Biochemistry (3 cr.; both) or CHM 32100 Analytical Chemistry I (4 cr.; fall)
   - B. Biochemistry: BCHM 56100 General Biochemistry I (3 cr.; both) or CHM 33900\(^6\) Biochemistry: A Molecular Approach (3 cr.; spring) or CHM 53300 Introductory Biochemistry (3 cr.; fall)
     - a. Physical Chemistry: CHM 37200 Physical Chemistry (4 cr.; spr) or CHM 37300 Physical Chemistry (3 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 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)

**PRE-PROFESSIONAL SELECTIVE**

1. **ANTH 21200** Culture, Food & Health (3 cr.; both) 7. **PHIL 28000** Ethics & Animals (3 cr.; fall)
2. **ANTH 34000** Cultural Perspectives on Health (3 cr.; both) 8. **SOC 37400** The Health of Americans (3 cr.; fall)
3. **ANTH 35200** Drugs, Culture & Society (3 cr.; spring) 9. **SOC 57200** Comparative Healthcare Systems (3 cr.; fall)
4. **HK 44000** Human Diseases and Disorders (3 cr.; both) 10. **SOC 57300** Human Side of Medicine (3 cr.; fall)
5. **HK 44500** Epidemiology (3 cr.; both) 11. **SOC 57400** Social Organization of Healthcare (3 cr.; spring)
6. **PHIL 27000** Biomedical Ethics (3 cr.; spring) 12. **SOC 57600** Health and Aging in America (3 cr.; fall)

**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 7-18 credits

---

\(^1\) A 500-level BIOL course other than BIOL 54200 must be taken as part of either requirement #13 or #14.
\(^2\) A course used to satisfy requirement #13 may not also count for requirement #14.
\(^3\) This course may count as a Biology Selective and as the College of Science Teambuilding and Collaboration requirement.
\(^4\) This course may count as a Biology Selective and as the College of Science Multidisciplinary requirement.
\(^5\) This course may count as a Biology Selective and as the College of Science Great Issues requirement.
\(^6\) 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.
\(^7\) This course may not be used to satisfy the College of Science General Education or Language & Culture requirements.