CELL, MOLECULAR AND DEVELOPMENTAL BIOLOGY

**Graduation Requirements:**
- A minimum 2.0 average in all biology courses required for this major
- A minimum of 32 credits at or above the 30000-level completed at a Purdue campus
- At least one 50000-level Biology course other than BIOL 50000 or 54200
- 124 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 | First Year Biology Lab (2 cr.; both) |
| 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 & Evolution (2 cr.; spring) |

9. **One of these four options:** *(Cell, Molecular, and Developmental Biology majors must take BIOL 39500, Principles of Development (4 cr.; spring))*
   - A. BIOL 39500 Principles of Physiology (4 cr.; spring)
   - B. BIOL 39500 Macromolecules (3 cr.; fall)
   - C. **BIOL 39500 Principles of Development (4 cr.; spring)**
   - D. BIOL 43800 General Microbiology (3 cr.; fall) and BIOL 43900 Microbiology Lab (2 cr.; fall)

10. **Two of these three courses:**
    - A. BIOL 41500 Intro. to Molecular Biology (3 cr.; fall)
    - B. BIOL 42000 Eukaryotic Cell Biology (3 cr.; fall)
    - C. BIOL 48100 Eukaryotic Genetics (3 cr.; spring)

11. BCHM 56100 General Biochemistry I (3 cr.; both) or CHM 53300 Introductory Biochemistry (3 cr.; fall)

12. BIOL 50000 Introductory Module: Protein Expression plus two additional modules of BIOL 50000 (2 cr.; both) or 54200 (1 cr.; both) *(various titles)*

13. **One of these five courses:**
    - A. BIOL 51600 Molecular Biology of Cancer (3 cr.; spring)
    - B. BIOL 55000 Plant Molecular Biology (3 cr.; spring)
    - C. BIOL 57300 Molecular Biology of Animal Cells (3 cr.; fall)
    - D. BIOL 59500 Cellular Biology of Plants (3 cr.; fall)
    - E. BIOL 59500 Developmental Biology (3 cr.; spring)

14. **Six credits of the following:**
   - BIOL 39500 Macromolecules (3 cr.; fall)
   - 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.; fall)
   - BIOL 43600 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 Cellular Microbiology (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 49300 Intro to Ethology (3 cr.; fall)
   - 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 52800 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 55000 Plant Molecular Biology (3 cr.; spring)
   - BIOL 55900 Endocrinology (3 cr.; fall)
   - BIOL 56200 Neural Systems (3 cr.; spring)
   - BIOL 57300 Molecular Biology of Animal Cells (3 cr.; fall)
   - BIOL 58000 Evolution (3 cr.; spring)
   - BIOL 58500 Ecology (3 cr.; fall)
   - BIOL 59100 Field Ecology (4 cr.; alternate fall)
   - BIOL 59200 Evolution of Behavior (3 cr.; spring)
   - BIOL 59500 Protein Bioinformatics (2 cr.; spring)
   - BIOL 59500 Developmental Biology (3 cr.; spring)
   - BIOL 59500 Animal Communication (3 cr.; alternate fall)
   - BIOL 59550 Methods & Measurement in Physical Biochemistry (3 cr.; fall)
   - BIOL 59500 Cellular Biology of Plants (3 cr.; fall)
   - BIOL 59700 Sex and Evolution (3 cr.; alternate fall)
   - BCHM 56200 General Biochemistry II (3 cr.; both)

Three credits of undergraduate research, approved by the Cell, Molecular and Development Area Committee, may be used to replace some or all of the lab modules.

*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)

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 24200  Intro to Heat and Thermal Physics  (1 cr.;
      spring) 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 - 22 credits