BIOCHEMISTRY

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 Requirement:** Choose one of these eight options:
   (Biochemistry majors must choose BIOL 39500, Macromolecules)
   - 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. BIOL 41500 Intro. to Molecular Biology (3 cr.; fall)
11. BIOL 42000 Eukaryotic Cell Biology (3 cr.; fall)
12. BIOL 59500 Methods & Measurement in Physical Biochemistry (3 cr.; fall)

13. **Biology Selective**: One of these courses:
    - A. BIOL 41600 Viruses and Viral Diseases (3 cr.; spring)
    - B. BIOL 43800 General Microbiology (3 cr.; fall)
    - C. BIOL 47800 Intro to Bioinformatics (3 cr.; fall)
    - D. BIOL 48100 Eukaryotic Genetics (3 cr.; spring)
    - E. BIOL 51100 Intro. to X-Ray Crystallography (3 cr.; spring)
    - F. BIOL 51700 Molecular Biology of Proteins (2 cr.; spring)
    - G. BIOL 52900 Bacterial Physiology (3 cr.; spring)
    - H. BIOL 53700 Immunology (3 cr.; spring)
    - I. BIOL 53800 Molecular, Cellular & Developmental Neurobiology (3 cr.; spring)
    - J. BIOL 54100 Molecular Genetics of Bacteria (3 cr.; fall)
    - K. BIOL 55001 Eukaryotic Molecular Biology (3 cr.; fall)
    - L. BIOL 59500 Epigenetics in Human Disease (3 cr.; fall)
    - M. BIOL 59500 Genetics & -Omics of Host-Microbe Interaction (3 cr.; fall)
    - N. BIOL 59500 Theory of Molecular Methods (3 cr.; fall)

14. BIOL 44201 Introductory Module: Protein Expression
15. **Biology Lab Selectives:** Two additional modules of BIOL 442xx[1] (1-2 cr.; both) (various titles) or 54200[1] Neurophysiology (1 cr.; fall)

16. BCHM 56100 General Biochemistry I (3 cr.; fall)
17. BCHM 56200 General Biochemistry II (3 cr.; spring)

[1] The two additional modules may be replaced by one of these: BIOL 43900 Microbiology Lab (2 cr.; fall); or by four credits of undergraduate research (BIOL 49400 or 49900 – this must be approved in advance by the Undergraduate Studies Committee).

Other Biochemistry requirements and the extra requirements for the Biochemistry Honors Curriculum are on the back of this page.

CHEMISTRY

1. **General Chemistry:**
   - A. CHM 12901 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. **Analytical Chemistry Selective:** One of these three courses:
   - A. BCHM 22100 Analytical Biochemistry (3 cr.; both)
   - B. CHM 22400 Intro. to Quantitative Analysis (4 cr.; spring)
   - C. CHM 32100 Analytical Chemistry (4 cr.; fall)

4. **Physical Chemistry Selective:** One of these two options:
   - A. CHM 37200 Physical Chemistry (4 cr.; spring)
   - B. CHM 37300 Physical Chemistry (3 cr.; fall) and CHM 37400 Physical Chemistry (4 cr.; spring)

MATH

For the Biochemistry Major, you must choose one of the following calculus options when fulfilling CoS Core requirements: MA 16100-16200, MA 16500-16600, or MA 17300.

PHYSICS Selectives: One of these two options:

1. PHYS 23300 Physics for Life Sciences (4 cr.; both) and PHYS 23400 Physics for Life Sciences (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 - 5 credits

BIOCHEMISTRY HONORS CURRICULUM

A 3.0 or higher graduation index is required to graduate in the Biochemistry Honors Curriculum.

In addition to the requirements listed for the Biochemistry program, at least two of the following courses/course sequences must be completed when fulfilling other requirements:

1. CHM 32100 Analytical Chemistry (4 cr.; fall)
2. CHM 37300 Physical Chemistry (3 cr.; fall) and CHM 374 Physical Chemistry (4 cr.; spring)
3. 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)