BIOLOGY EDUCATION

(for students entering Biology in Fall 2012 or later – revised July 2013)

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**
   BIOL 14502 1st Year Biology Lab w/Micro Research Project (2 cr.; spring) **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:
   - A. BIOL 32800[1] Principles of Physiology (4 cr.; spring)
   - B. BIOL 36600[1,2] Principles of Development (3 cr.; spring)
   - C. BIOL 39500[1] Macromolecules (3 cr.; fall)
   - D. BIOL 41500[1] Intro. to Molecular Biology (3 cr.; fall)
   - E. BIOL 41600[1] Viruses & Viral Diseases (3 cr.; spring)
   - F. BIOL 42000[1] Eukaryotic Cell Biology (3 cr.; fall)
   - G. BIOL 43600[1] Neurobiology (3 cr.; fall)
   - H. BIOL 43800[1,2] General Microbiology (3 cr.; fall)
10. **Ten credits** from the following: must choose at least **one** from each of Groups A and B, and at least **one** course from the Laboratory list below.

Group A:

BIOL 39500[1] Macromolecules (3 cr.; fall)
BIOL 41500[1] Intro. to Molecular Biology (3 cr.; fall)
BIOL 41600[1] Viruses and Viral Diseases (3 cr.; spring)
BIOL 42000[1] Eukaryotic Cell Biology (3 cr.; fall)
BIOL 43600[1] Neurobiology (3 cr.; fall)
BIOL 43800[1,2] General Microbiology (3 cr.; fall)
BIOL 43900[2] Microbiology Lab (2 cr.; fall)
BIOL 44400[2] 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 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)

Group B:

BIOL 30100[3] Human Anatomy & Physiology (3 cr.; fall)
BIOL 30200[3] Human Anatomy & Physiology (3 cr.; spring)
BIOL 32800[1,2] Principles of Physiology (4 cr.; spring)
BIOL 36600[1,2] Principles of Development (3 cr.; spring)
BIOL 43200 Reproductive Physiology (3 cr.; alternate fall)
BIOL 48300 Environmental & Conservation Biology (3 cr.; spring)
BIOL 53700 Immunology (3 cr.; spring)
BIOL 55900 Endocrinology (3 cr.; fall)
BIOL 58000 Evolution (3 cr.; fall)
BIOL 52900 Bacterial Physiology (3 cr.; spring)
BIOL 53300 Medical Microbiology (3 cr.; fall)
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 56200 Neural Systems (3 cr.; spring)
BIOL 59500 Protein Bioinformatics (2 cr.; spring)
BIOL 59500 Methods & Measurement in Physical Biochemistry (3 cr.; fall)
BIOL 59500 Neural Mechanisms in Health & Disease (3 cr.; fall))
BIOL 59500 Cellular Biology of Plants (3 cr.; fall)
BIOL 59500 Practical Biocomputing (3 cr.; spring)
BCHM 56100 General Biochemistry I (3 cr.; fall)
BCHM 56200 General Biochemistry II (3 cr.; spring)
BCHM 57200 Adv. Biochemical Techniques (2-4 cr.; fall)
CHM 53300 Introductory Biochemistry (3 cr.; fall)

Laboratory: Choose one option:

BIOL 43900 Microbiology Lab (2 cr.; fall)
BIOL 59100 Field Ecology (4 cr.; alternate fall)
BIOL 58500[2] Ecology (3 cr.; spring)
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 Developmental Biology (3 cr.; fall)
BIOL 59500 Ecological Statistics (3 cr.; fall)
BIOL 59500 Sensory Ecology (3 cr.; alternate spring)
BIOL 59900 Quantitative Physiology (3 cr.; spring)
HORT 30100[2] Plant Physiology (4 cr.; fall)
BIOL 44201 Protein Expression (2 cr.; both) **and** at least one additional credit of BIOL 442xx (1-2 cr.; both) (various titles) or 54200 Neurophysiology (1 cr.; fall)

Research (49400 or 49900), (max of 2 credits) will count toward the 10 credits but will not count toward the Group A or B or the laboratory requirement.

[1] Courses listed for the Intermediate Requirement may satisfy #9 above and still count as part of the 10 credit requirement (#10).
[2] These courses are recommended for teaching majors.
[3] If both BIOL 30100 & 30200 are completed, three of the six credits will count toward the 10 credit 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.

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)

EDUCATION

1. EDCI 20500 Exploring Teaching as a Career (3 cr.; both)
2. EDCI 28500 Multiculturalism and Education (3 cr.; both)

3. EDPS 23500 Learning and Motivation (3 cr.; both)
4. EDPS 26500 The Inclusive Classroom (3 cr.; both)

5. EDCI 27000 Introduction to Educational Technology and Computing (3 cr.; both)
6. EDST 20000 History and Philosophy of Education (3 cr.; both)
7. EDCI 30900 Reading in Middle and Secondary Schools: Methods and Problems (3 cr.; both)
8. EDCI 42100 The Teaching of Biology in Secondary Schools (3 cr.; fall)
9. EDCI 42800 Teaching Science in the Middle and Junior High School (2 cr.; spring)
10. EDCI 49800 Supervised Teaching Life Science Education (10 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 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 none