

# MICROBIOLOGY

## 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 1<sup>st</sup> Year Biology Lab (2 cr.; both) **or**  
BIOL 14501 1<sup>st</sup> 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:  
**(Microbiology majors must choose option H, BIOL 43800)**
  - 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 41600 Viruses and Viral Diseases (3 cr.; spring)
11. BIOL 43900 Microbiology Lab (2 cr.; fall)
12. BIOL 52900 Bacterial Physiology (3 cr.; spring)
13. **Microbiology Selective I:** Choose one:
  - A. BIOL 54100<sup>2</sup> Molecular Genetics of Bacteria (3 cr.; fall) **or**
  - B. BIOL 59500<sup>2</sup> Genetics and –Omics of Host-Microbe Interactions (3 cr.; fall)
14. **Chemistry Selective:**<sup>1</sup> One of these three courses:
  - A. BCHM 56100 General Biochem (3 cr.; fall)
  - B. CHM 33900<sup>1</sup> Biochemistry : A Molecular Approach (3 cr.; spring)
  - C. CHM 53300 Introductory Biochemistry (3 cr.; fall)
15. **Microbiology Selective II:** Three credits of the following:
  - BIOL 44600 Molecular Biology of Pathogens (3 cr.; spring)
  - BIOL 47800 Intro to Bioinformatics (3 cr.; fall)
  - BIOL 44201 Introductory Module: Protein Expression plus two additional modules of BIOL 442xx (1-2 cr.; both) or 54200 (1 cr.; fall)
  - BIOL 53300 Medical Microbiology (3 cr.; fall)
  - BIOL 54100<sup>2</sup> Molecular Genetics of Bacteria (3 cr.; fall)
  - BIOL 54900 Microbial Ecology (2 cr.; alternate spring) plus one credit of BIOL 442xx (1-2 cr.; both) or 54200 (1 cr.; fall)
  - BIOL 55001 Eukaryotic Molecular Biology (3 cr.; fall)
  - BIOL 59500<sup>2</sup> Genetics and –Omics of Host-Microbe Interactions (3 cr.; fall)
  - BIOL 59500 Theory of Molecular Methods (3 cr.; fall)

Footnotes, additional requirements for the Microbiology major, and the additional requirements for the Microbiology Honors major continue on the back of this page.

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## **CHEMISTRY**

### **1. General Chemistry:**

- A. CHM 12901<sup>1</sup> 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)

## **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)

## **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 12-22 credits

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## **MICROBIOLOGY HONORS CURRICULUM**

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

In addition to the requirements listed for the Microbiology program, the following three choices must be completed:

1. 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)
2. C S 15800 C Programming (3 cr.; both) or C S 17700 Programming with Multimedia Objects (4 cr.; both)
3. MA 26100 Multivariate Calculus (4 cr.; both)

and at least three of the following five choices must be completed:

1. PHYS 17200 Modern Mechanics (4 cr.; both) and PHYS 27200 Electric and Magnetic Interactions (4 cr.; both)
2. CHM 32100 Analytical Chemistry (4 cr.; fall)
3. 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)
4. STAT 50300 Statistical Methods for Biology (3 cr.; both)
5. MA 26200 Linear Algebra and Differential Equations (4 cr.; both)

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<sup>1</sup> Students who select 12901 for General Chemistry must also select CHM 33900 and 33901 for the Chemistry Selective. Students who end up with Special Case approval for some other Gen Chem courses may choose the other Chem Selective options.

<sup>2</sup> This course may count for requirement #13 or #15, but not both.

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