

# GENERAL BIOLOGY I

Fall 2015 Course Syllabus for BIO 205

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This course is the first semester of a two semester general biology. The intention of this course is to provide a good background in general biological concepts for subsequent science classes. Topics covered will include basic chemistry of biological compounds, cell structure and function, metabolism, photosynthesis, the cell cycle, molecular biology, and genetics.

**Credit Hours:** 5 (3 lecture, 3 lab, 1 recitation)

**Prerequisites:** none

**Lecture Times:** Monday and Wednesday from 9:00 – 10:20 a.m. (3411)

**Lab Times:** Wednesday from 10:30 – 1:20 p.m. (3306)

**Recitation Times:** Monday from 10:00 – 11:20 a.m. (3411)

**Lecture Text:** Reece, Urry, Cain, Wasserman, Minorsky & Jackson. (2011). *Campbell Biology*. San Francisco: Benjamin Cummings.

**Lab Manual:** Reece, Urry, Cain, Wasserman, Minorsky, Jackson, Morgan & Carter. (2011). *Investigating biology lab manual*. San Francisco: Benjamin Cummings.

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- **Web:** <http://members.toast.net/bier/mercy.html>
- **Office Hours:** Office hours are set up so that you can discuss concerns about the class, ask for clarification on the classes or reading material, or just to talk about biology or life in general. If the set hours are not convenient, call me so that we can set up a time that is mutually agreeable. Please visit the web site to see the current office hours.

**The instructors reserve the right to make changes to the syllabus. All policies in the College Catalog, Program Handbooks and the Mercy College of Ohio Student Handbook are applicable to this course.**

## GRADING

The classroom portion of the class will make up four-fifths of the course grade. Grades for this portion of the class will be based on the results from daily quizzes, three tests, and a comprehensive final. **Note:** Additional assignments may be added if the instructor deems it necessary. Also, the grading system may be adjusted to better measure student performance.

Each quiz, worth 5 points each, consists of true-false, multiple choice, and/or fill-in questions. These quizzes will cover the material from the previous classes. You continue to accumulate points up to 100. Tests will be multiple choice and essays and will cover two to four chapters of information. The final is comprehensive, will consist of true-false and multiple choice, and may include any other types of questions I deem useful to determine your level of comprehension. The final exam carries the weight of two tests.

**There will be no makeup quizzes or tests.** However, missing a test will not be held against you. If you do not finish all three tests, the missing points will be made up as part of the comprehensive final. That is, the final, which is worth 200 points, would now be worth 300 points (200 points normal weight + 100 points for the missed test).

Grades in the lab will be based on 1) pre-lab questions, 2) written observations and conclusions from lab exercises, 3) demonstration of lab skills, and 4) participation, cleanliness and maintenance of your work area. Due to the nature of the lab, missed labs are difficult to make up. Therefore, attendance at the regularly scheduled lab time is strongly recommended. If you cannot avoid missing a lab, please contact me ahead of time. I will do my best to provide you with the materials necessary to make up a lab, but I cannot guarantee that a lab can be made up.

The following is a breakdown of the points for this class.

	Points
Lecture (80%)	
• Quizzes (at least twenty worth 5 points each)	100
• Tests (three worth 100 points each)	300
• Comprehensive Final Exam	200
Lab (20%)	
• Written Lab Exercises (at least six worth 20 points each)	120
• Pre-Lab Exercises (at least six worth 5 points each)	30

The number of points that you achieve throughout the semester will determine your final grade. The table to the right lists the minimum percentage required for each letter grade. You can determine your grade by dividing the number of points that you have achieved and dividing by the total points available (750) at the end of the semester).

Course Grade	Percent Needed
A	90%
B	80%
C	70%
D	60%

## LEARNING OBJECTIVES

1. Describe characteristics of living things.
2. Apply the scientific method in a laboratory setting.
3. Describe the structures of atoms and molecules, and explain what causes substances to be reactive or inert.
4. Describe structure and characteristics of four major classes of organic molecules.
5. Explain why and how enzymes are so important and relate their function to physiological processes.
6. Diagram cell structure including organelles and relate cellular processes to structure and function.
7. Describe the reactants, products, structures and important intermediates of aerobic and anaerobic cellular respiration, and relate them to cellular structure and function.
8. Describe the chemical equation for photosynthesis, and describe reactants, products, structures and important intermediates of photosynthesis and relate them to cell structure.
9. Distinguish between mitosis and meiosis, and explain the processes by which cells divide in each of these ways.
10. Define and apply Mendel's laws of inheritance.
11. Determine, using Punnett squares, the genotypes and phenotypes of monohybrid and dihybrid crosses.
12. Demonstrate genetic mapping using recombination data.
13. Construct a basic DNA model and describe its structure and replication.
14. Explain how gene regulatory processes occur in prokaryotes and viruses.
15. Describe gene expression and regulation in eukaryotes
16. Describe how organisms can change over time through the process of natural selection and microevolution or quickly through macroevolution.

## INSTITUTIONAL LEARNING OUTCOMES

1. Exhibit **proficiency** and competency within one's discipline and in service to others – Students will develop expertise in the basics of biology as a foundation for developing a deeper understanding in more advanced courses. For the college, proficiency will be evaluated by specific questions on the exams that assess the group's knowledge on aspects of the learning objectives.

## HUMAN BIOLOGY PROGRAM OUTCOMES

2. Apply the **scientific method** to examine and interpret biological questions – Students will describe, set up, run and discuss experiments and their conclusions using appropriate scientific experimental procedures.
3. Demonstrate competency performing **laboratory** techniques – Students will properly utilize scientific instruments, e.g., microscopes, spectrophotometers, to collect accurate and valid experimental data.