



Course Number	Course Title	Credits
BIO 100	Introductory Biology	3
Hours: Lecture/Lab/Other	Co- or Pre-requisite	Implementation Semester & Year
3 lecture/0 laboratory	Prerequisite: ENG 034 or permission of instructor Corequisite: MAT 037 or 042	Spring 2022

Catalog description: Selected fundamental principles of biology for students who have not had high school biology or who need a review before taking other courses in biology, horticulture and the life sciences. Topics include scientific inquiry, chemistry of living organisms, cellular organelles, techniques of observation, data gathering and analysis. Emphasis will be placed on the necessary study skills that are useful when taking college science courses. Occasional laboratory demonstrations. BIO 100 does not fulfill any requirements in the Mercer County Community College biology program and is designed to prepare students for BIO 101, General Biology.

General Education Category:
Not GenEd

Course coordinator:
Diane N. Hilker, Professor of Biology
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Required texts & Other Materials:

Supplemental materials will be provided by the instructor for each semester.

Recommended text but not required: Cell Biology and Genetics by Christine Evers and Lisa Starr. Copies found at the circulation desks of MCCC's Libraries.

Course Student Learning Outcomes (SLO):

Upon successful completion of this course, the student will be able to:

1. Identify and apply various study skills to allow them to be successful in college science courses. [Supports ILGs #1,4, 10]
2. Develop and apply knowledge of campus resources to self-advocate. [Supports ILGs #1, 4]
3. Apply scientific notation, convert within the metric system and convert from one unit of measure to another. [Supports ILGs #2, 11]
4. Acquire basic skills in the laboratory by using standard equipment and measurement and observation techniques in order to gather, analyze and interpret qualitative and quantitative data. [Supports ILGs #1, 2, 3, 4, 11]
5. Develop a basic understanding of the fundamental principles, concepts and terminology of biology. [Supports ILGs 1, 2,3,4, 9, 10,11]
6. Demonstrate the ability to apply the scientific method of inquiry to gather and use information for the purposes of critical thinking, information analysis and problem solving. [Supports ILGs #1, 2, 3, 4, 11]

Course-specific Institutional Learning Goals (ILG):

Institutional Learning Goal 1. Written and Oral Communication in English. Students will communicate effectively in both speech and writing.

Institutional Learning Goal 2. Mathematics. Students will use appropriate mathematical and statistical concepts and operations to interpret data and to solve problems.

Institutional Learning Goal 3. Science. Students will use the scientific method of inquiry, through the acquisition of scientific knowledge.

Institutional Learning Goal 4. Technology. Students will use computer systems or other appropriate forms of technology to achieve educational and personal goals.

Institutional Learning Goal 9. Ethical Reasoning and Action. Students will understand ethical frameworks, issues, and situations.

Institutional Learning Goal 10. Information Literacy: Students will recognize when information is needed and have the knowledge and skills to locate, evaluate, and effectively use information for college level work.

Institutional Learning Goal 11. Critical Thinking: Students will use critical thinking skills understand, analyze, or apply information or solve problems.

Units of study in detail – Unit Student Learning Outcomes:

Topic 1: How to Study Science [Supports SLO #1]

The student will be able to...

- Assess their learning styles, personality types and study habits to gain an understanding of the impact of those factors on college learning.
- Identify factors that impact success in college, including stress, time management, and motivation.
- Create obtainable education goals for the semester.
- Demonstrate an understanding of academic skills needed for college-level courses.
- Demonstrate an understanding of support skills needed for success, note-taking strategies, organizational skills, study practices, memory strategies and test taking.
- Understand the component parts of the course, the syllabus, textbook and class notes.

Topic 2: Resources at the College [Supports SLOs #1, 2]

The student will be able to...

- Identify the need to build and maintain relationships with other students, faculty and academic advisor.
- Locate and utilize support systems on the campus including the Tutoring Center, Student Advocates, Library, Counselors, Transfer Advisors, and Computer Centers.
- Apply search strategies to use the MCCC electronic databases to locate specific information in biology.
- Summarize in a written report a biology article from a peer reviewed science journal.

Topic 3: Is Your Math Ready for Biology [Supports SLO #3]

The student will be able to...

- Convert a whole number into scientific notation and the reverse.
- Understand the importance of the metric system in science when expressing measurements in length, mass and volume.
- Convert from unit of the metric system to another unit.
- Convert a measurement from the metric system to the English system and the reverse.

Topic 4: Standard Biology Laboratory Equipment [Supports SLOs #3, 4, 5]

The student will be able to...

- Take measurements using the metric system and convert within the metric system.
- Determine which pieces of equipment are best to use in a biology lab and to be able to use the equipment.
- Convert from Fahrenheit to Celsius when taking temperatures.
- Understand the pH scale and take pH measurements of various solutions.

Topic 5: Introduction to the Compound Light Microscope [Supports SLOs #4,5]

The student will be able to...

- Describe differences between the light and electron microscope.
- Identify and describe the function of the basic parts of the compound and dissecting light microscopes.
- Focus an object with the compound light microscope.
- Prepare and observe slides of protozoa, animal and plant cells.

Topic 6: Scientific Figures [Supports SLO #5]

The student will be able to...

- Analyze and interpret scientific figures including maps, graphs, tables, diagrams and illustrations.
- Construct a line graph from scientific data.

Topic 7: The Scientific Process: Laboratory Report [Supports SLOs #4,5,6]

The student will be able to...

- Describe the many levels of organization of life.
- Understand the common themes that unite all life.
- Describe how evolution can explain the diversity of life.
- Compare and contrast the difference between natural and artificial selection.
- Understand and be able to apply the scientific method.
- Conduct a laboratory experiment, interpret and analyze the results, and write a laboratory report.

Topic 8: How Do We Name Living Things? [Supports SLO #5, 6]

The student will be able to...

- Describe the various methods by which organisms were classified in the past and currently.
- Explain the characteristics of a species.
- Distinguish between prokaryotic & eukaryotic cells.
- Compare and contrast the characteristics of the different kingdoms of life.
- Understand the differences between the three different domains.

Topic 9: The Chemistry of Life [Supports SLOs #5, 6]

The student will be able to...

- Understand the structure of an atom and the different types of chemical bonds.
- Describe the importance of water to life.
- Understand how macromolecules are synthesized and degraded.
- Describe the structure and characteristics of the four macromolecules of life.

Topic 10: Cells - The Basic Unit of Life [Supports SLOs #5, 6]

The student will be able to...

- Explain the cell theory and differentiate between prokaryotic and eukaryotic cells.
- Describe the function and characteristics of the organelles found in the eukaryotic cell.
- Identify the organelles of an animal and plant cell.
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Evaluation of student learning:

Final grades will be determined and based on your total accumulation of points. The course work will be divided as follows:

Tests:	40%
Quizzes:	30%
Homework/Library Assignment:	20%
Attendance/Participation:	10%