



Course Overview

High School | 11-12 | Intro to Microbiology - Last Updated on April 4, 2025

DESCRIPTION

K-12 Content Area | Mission & Philosophy Statement

- Young people are born investigators, with natural curiosities about the physical, biological, and social worlds they experience. Anchoring science learning in real-world phenomena connects curiosities to core conceptual understandings.
- Students actively construct understanding through inquiry, experimentation, and analysis to develop science and engineering practices such as asking questions, planning and carrying out investigations, and constructing explanations.
- Integration of crosscutting concepts such as patterns, cause and effect, and systems thinking promote interdisciplinary understanding and sense-making of the natural world.
- Science learning occurs alongside other disciplines to foster holistic understanding and application of knowledge.

Course Description

This course is an introductory course in microbiology modified to be of appropriate rigor for high school students. Major topics include a brief history of microbiology, growth and culturing of bacteria, a survey of the bacteria, a survey of viruses, eukaryotic microorganisms and parasites, sterilization and disinfection, antimicrobial therapy, host-microbe relationships and disease processes, epidemiology, and immunity. Upon successful completion of this course students will have a basic understanding and appreciation of the microbial world and how it affects humans. Additionally, students will be able to perform basic laboratory procedures and gain a deeper understanding of the process of science.

STANDARDS

Pennsylvania - Grade 12 - Science and Technology and Engineering

- 3.1
- 3.1.A
- 3.1.12.A1
- 3.1.12.A2
- 3.1.12.A4
- 3.1.12.A7
- 3.1.12.A9
- 3.1.12.C1
- 3.1.12.C2
- 3.1.12.C4
- 3.4.12.B1
- 3.4.12.B2
- 3.4.12.E2
- 3.4.12.E6

COURSE OBJECTIVES

Specific objectives for this course are aligned to the Pennsylvania Academic Standards for Science and Technology and Engineering Education as outlined in the scope and sequence for Microbiology.



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ASSESSMENT TYPES

The following assessment types will be used during the course:

- Curriculum Based Measures
- Formative Assessments
- Summative Assessments
- Performance Based Assessments

SUGGESTED METHODS OF INSTRUCTION

A science program demands the use of a variety of instructional strategies to foster scientific thinking. Below is a list of suggested strategies for high-quality instruction:

- Instructional components outlined in *Framework for Teaching* by Charlotte Danielson
- Hands-on learning
- Posing questions for investigation
- Cooperative learning and collaboration
- Inquiry, engineering, and design

RESOURCES

District Approved Program Resources	District Approved Supplemental Resources	District Approved Technology Resources
<p>Black and Black. (2018). <i>Microbiology: Principles and Explorations, 10th Edition</i>. Wiley.</p> <ul style="list-style-type: none"> • Student Print Edition <p>Black and Black. (2018). <i>Microbiology: Principles and Explorations, 10th Edition</i>. Wiley.</p> <ul style="list-style-type: none"> • Teacher Print Edition 	<ul style="list-style-type: none"> • Teacher Created Resources • District approved supplemental resources and labs 	