

## Microbiology Syllabus

### RCAS Policies/Procedures

Students will be required to follow all RCAS policies and procedures. To view the RCAS High School Student Handbook, click [handbook](#).

### Course Description

The practical laboratory techniques used in this class would be beneficial for any student considering a career in any lab or medical related field. In this hands-on class, students will spend the majority of their time in the laboratory on the study, identification, isolation, and control of microorganisms, with an emphasis on bacteria.

### Grading

Students' grades will be weighted as follows:

- Quizzes 30%
- Assignments 35%
- Labs & Projects 35%

### Textbook

*Nester's Microbiology: A Human Perspective & Microbiology Experiments Manual*

### Reading

American Society for Microbiology Careers Article  
Mudwatt Microbial Fuel Cell Pamphlet  
University of Wisconsin Macroinvertebrate ID Sensitivity Sheet

### Optional Reading

Brine Shrimp Research Articles  
Virus Research Articles

### Instructional Resources

BioManBio.com Simulations

- Enzyme Simulation
- Cell Membrane Simulation

Michigan State University Microbiology Virtual Labs

- Streak Plating Virtual Lab
- Gram Staining Virtual Lab
- Bacteria Growth Virtual Lab

New Mexico State University Microbiology Virtual Labs

- Gram Staining/Contaminated Milk Virtual Lab

Howard Hugh's Medical Institute Virtual Lab

- Bacterial ID Virtual Lab

## Essential Questions

**HS-LS1-5, HS-LS2-5, HS-LS2-7, HS-ESS3-4:** How do microbes impact the world medically, environmentally, and economically?

**INDICATOR #HS2 1, INDICATOR #IMD 2:** What careers are available for people with microbiology backgrounds and what do their jobs look like?

**INDICATOR #HS2 1, INDICATOR #IMD 2:** How can knowledge of microbes and foundational laboratory techniques be used to identify unknown bacteria?

**HS-LS1-2, HS-LS4-2, HS-LS4-4:** What are the different categories of microbes and how are they different from each other?

## Essential Learning Intentions

**INDICATOR #HS2 1, INDICATOR #IMD 2:** Students will learn how to use aseptic technique to keep themselves, their workspace and their samples clean and safe.

**INDICATOR #HS2 1, INDICATOR #IMD 2:** Students will learn how to grow, isolate and identify bacteria.

**INDICATOR #HS2 1, INDICATOR #IMD 2:** Students will learn how to use important laboratory equipment to conduct microbiology experiments: incubator, autoclave, microscope, spectrophotometer, micropipettes, etc.

**HS-LS1-2:** Students will learn how to categorize different microbes and how different ones are able to cause infection/disease.

**HS-LS1-2:** Students will learn how different microorganisms reproduce and how they affect the body.

**HS-LS1-5, HS-LS2-5, HS-LS2-7, HS-ESS3-4:** Students will learn how microbes impact the environment and how they are used to create environmental solutions.

**HS-LS4-2, HS-LS4-4:** Students will learn how and why some microbes can adapt and become resistant to modern medicine.