



FOUNDATION SKILLS

PATHWAY: All Pathways
COURSE: All CTAE Courses
UNIT 2.11: Bacteria, Fungi, and Decomposition



INTRODUCTION

Annotation:

This lesson explains bacteria, fungi, and decomposition as well as a view of the different professions that work with these subjects.

Grade(s):

x	9 th
x	10 th
x	11 th
x	12 th

Time: One 50 minute period.

Author: Philip Ledford and Dr. Frank Flanders

Additional Author(s):

Students with Disabilities:

For students with disabilities, the instructor should refer to the student's IEP to be sure that the accommodations specified are being provided. Instructors should also familiarize themselves with the provisions of Behavior Intervention Plans that may be part of a student's IEP. Frequent consultation with a student's special education instructor will be beneficial in providing appropriate differentiation.



FOCUS STANDARDS

GPS Focus Standards:

AG-PSB-15: The student identifies diseases, related organisms, and physiological disorders affecting plants, and prescribes methods of prevention and control.

- f. Explains how fungi, bacteria, and viruses are spread.
- l. Differentiates between pathogenic and non-pathogenic diseases.

HS-IBT-1 Students will demonstrate knowledge and understanding of the academic subject matter required for proficiency within their area. Students will demonstrate knowledge in fundamentals of math and statistics concepts, genetics, organic chemistry, biochemistry, cell biology, microbiology and molecular biology.

- e. Analyze cellular design and function in plant, animal, and bacterial cells.

HS-ABT-7 Students will demonstrate proficiency in advanced biotechnology techniques.

- k. Describe the different cell types and culture methods (i.e. bacteria, yeast, animal, and plant) as used in biotechnology.

GPS Academic Standards:

SM1 Students will analyze different types of microorganisms and their defining characteristics.

- b. Explain differences between prokaryotes and eukaryotes.
- d. Compare relative sizes of microorganisms, different types of cell shapes, and various methods used to visualize microorganisms.



UNDERSTANDINGS & GOALS

Enduring Understandings:

All organic matter returns to the Earth through decomposition by bacteria and fungi.

Essential Questions:

- What would it be like if organic matter did not decompose?
- What effects does decomposition have on Earth's environment?

Knowledge from this Unit:

- Students will recall what makes things decompose.
- Students will evaluate what conditions are necessary for decomposition.
- Students will review helpful and harmful ways decomposers affect humans and animals.
- Students will analyze how humans can use micro organisms.
- Students will survey different professions that use micro organisms.

Skills from this Unit:

Students will be able to identify and differentiate bacteria from fungi and prokaryotic from eukaryotic cells and the effects they have on the decomposition of organic matter.



ASSESSMENT(S)

Assessment Method Type: Select one or more of the following. Please consider the type(s) of differentiated instruction you will be using in the classroom.

- Pre-test
- Objective assessment - multiple-choice, true- false, etc.
 - Quizzes/Tests
 - Unit test
- Group project
- Individual project
- Self-assessment - May include practice quizzes, games, simulations, checklists, etc.
 - Self-check rubrics
 - Self-check during writing/planning process
 - Journal reflections on concepts, personal experiences and impact on one's life
 - Reflect on evaluations of work from teachers, business partners, and competition judges
 - Academic prompts
 - Practice quizzes/tests
- Subjective assessment/Informal observations
 - Essay tests
 - Observe students working with partners
 - Observe students role playing
- Peer-assessment
 - Peer editing & commentary of products/projects/presentations using rubrics
 - Peer editing and/or critiquing
- Dialogue and Discussion
 - Student/teacher conferences
 - Partner and small group discussions
 - Whole group discussions
 - Interaction with/feedback from community members/speakers and business partners
- Constructed Responses
 - Chart good reading/writing/listening/speaking habits
 - Application of skills to real-life situations/scenarios
- Post-test

Assessment(s) Title:

Bacteria, Fungi, and Decomposition Test. Bacteria, Fungi, and Decomposition Crossword Puzzle.

Assessment(s) Description/Directions:

10 Multiple Choice, 3 True or False, and 2 Short (open ended) questions.
A crossword puzzle of the different definitions and important information.

Attachments for Assessment(s):

Bacteria, Fungi, and Decomposition Test.
Bacteria, Fungi, and Decomposition Crossword



LEARNING EXPERIENCES

Instructional planning: Include lessons, activities and other learning experiences in this section with a brief description of the activities to ensure student acquisition of the knowledge and skills addressed in the standards. Complete the sequence of instruction for each lesson/task in the unit.

Sequence of Instruction

1. Identify the Standards. Standards should be posted in the classroom for each lesson.

- **AG-PSB-15:** The student identifies diseases, related organisms, and physiological disorders affecting plants, and prescribes methods of prevention and control.
 - f. Explains how fungi, bacteria, and viruses are spread.
 - l. Differentiates between pathogenic and non-pathogenic diseases.

- **HS-IBT-1** Students will demonstrate knowledge and understanding of the academic subject matter required for proficiency within their area. Students will demonstrate knowledge in fundamentals of math and statistics concepts, genetics, organic chemistry, biochemistry, cell biology, microbiology and molecular biology.
 - e. Analyze cellular design and function in plant, animal, and bacterial cells.

- **HS-ABT-7** Students will demonstrate proficiency in advanced biotechnology techniques.
 - k. Describe the different cell types and culture methods (i.e. bacteria, yeast, animal, and plant) as used in biotechnology.

- **SM1** Students will analyze different types of microorganisms and their defining characteristics.
 - b. Explain differences between prokaryotes and eukaryotes.
 - d. Compare relative sizes of microorganisms, different types of cell shapes, and various methods used to visualize microorganisms.

2. Review Essential Questions.

What would it be like if organic matter did not decompose?
What effects does decomposition have on Earth's environment?

3. Identify and review the unit vocabulary.

Archaeobacteria – bacteria that have cells with no nucleus or organelles.

Bacteria – a prokaryotic or single celled microorganism.

Decomposition – the process of which organic matter breaks down into the simplest forms of matter.

Eukaryotic – organisms that have a cell nucleus.

Fungi – a eukaryotic or multi celled microorganism.

Inorganic – nonliving matter

Nonpathogenic – non-illness causing bacteria or organisms.

Organelles – parts of a cell the serve a specific function.

Organic – actual living matter i.e plants and animals.

Pathogenic – illness causing bacteria or organisms

Prokaryotic – organisms that lack a cell nucleus.

4. Present “My feet stink and other rotten stuff.” powerpoint.

5. Handout “Bacteria, Fungi, and Decomposition” cross word puzzle.

6. Handout “Bacteria, Fungi, and Decomposition” test.

Attachments for Learning Experiences:

My Feet Stink and Other Rotten Stuff.ppt

Notes & Reflections: May include notes to the teacher, pre-requisite knowledge & skills, suggestions, etc.



CULMINATING PERFORMANCE TASK (Optional)

Culminating Unit Performance Task Title:

Culminating Unit Performance Task Description/Directions/Differentiated Instruction:

Attachments for Culminating Performance Task: Please list.



UNIT RESOURCES

Web Resources:

<http://fig.cox.miami.edu/Faculty/Dana/monera.html>

<http://micro.magnet.fsu.edu/cells/bacteriacell.html>

<http://tolweb.org/tree?group=Eukaryotes&contgroup=Life>

Attachment(s): Supplemental files not listed in assessment, learning experiences, and performance task.

Materials & Equipment:

What 21st Century Technology was used in this unit:

<input checked="" type="checkbox"/>	Slide Show Software
<input type="checkbox"/>	Interactive Whiteboard
<input type="checkbox"/>	Student Response System
<input type="checkbox"/>	Web Design Software
<input type="checkbox"/>	Animation Software
<input type="checkbox"/>	Email

<input type="checkbox"/>	Graphing Software
<input type="checkbox"/>	Calculator
<input type="checkbox"/>	Desktop Publishing
<input type="checkbox"/>	Blog
<input type="checkbox"/>	Wiki
<input checked="" type="checkbox"/>	Website

<input type="checkbox"/>	Audio File(s)
<input type="checkbox"/>	Graphic Organizer
<input checked="" type="checkbox"/>	Image File(s)
<input type="checkbox"/>	Video
<input type="checkbox"/>	Electronic Game or Puzzle Maker