


Biology Curriculum Bundle #11

Title		Suggested Dates
Microorganisms and Their Habitats		4/19-5/7 (12 days)

Big Idea/Enduring Understanding	Guiding Questions
Microorganisms play an integral role in the health of organisms and in ecological systems.	<ul style="list-style-type: none"> ▪ How are microorganisms beneficial to the health of animals and plants? ▪ What is the role of microorganisms in disease and how do organisms fight infection?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the district curriculum.

Knowledge & Skills with Student Expectations	District Specificity/Examples	Suggested Resources (See note above)
<p>4 The student knows that cells are the basic structures of all living things and have specialized parts that perform specific functions, and that viruses are different from cells and have different properties and functions.</p> <p>4C Compare the structures and functions of viruses to cells and describe the role of viruses in causing diseases and conditions including --- distinguishing a vaccination vs. an antibiotic --- distinguishing living vs. nonliving. Such as</p> <ul style="list-style-type: none"> • Acquired immune deficiency syndrome • Common colds • Smallpox • Influenza • Warts • Bacteriophages 	<p><i>Bacterial, Protist and Fungal Pathogens / diseases Such as:</i></p> <ul style="list-style-type: none"> • <i>Streptococcus</i> • <i>Diphtheria</i> • <i>Botulism</i> • <i>anthrax</i> • <i>malaria</i> • <i>African sleeping sickness</i> • <i>Athletes foot</i> • <i>Ringworm</i> • <i>Jock itch</i> • <i>Yeasts infections</i> • <i>Schistosoma</i> • <i>Tape worms</i> • <i>Hook worms</i> • <i>Round worms</i> <p>Viral infections Such as</p> <ul style="list-style-type: none"> • Rabies • Chicken pox • Hepatitis • Polio 	<p>BIO_11_Viral replication lab (<i>this lab is missing a page</i>) Viral replication simulation (web link) (Click on Ch 19 link, then on the Active Art link, then on the big, green Start button)</p> <p>BIO_11_Epidemiology Lab (also see companion teacher page)</p>

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	<p>Cycles Such as</p> <ul style="list-style-type: none"> • Viral replication (lytic, lysogenic) <p><i>(4C) compare the structures of viruses to cells, describe viral reproduction, and describe the role of viruses in causing diseases such as human immunodeficiency virus (HIV) and influenza.</i></p>	
<p>4 The student knows that cells are the basic structures of all living things and have specialized parts that perform specific functions, and that viruses are different from cells and have different properties and functions.</p> <p>4D Identify and describe the role of bacteria in maintaining health. Such as</p> <ul style="list-style-type: none"> • Digestion • Causing disease, such as <ul style="list-style-type: none"> • Streptococcus infections • Diphtheria 	<p>Such as</p> <ul style="list-style-type: none"> • Decomposition • Food production • Medication <p>Such as</p> <ul style="list-style-type: none"> • Staphylococcus infections <p>Such as</p> <ul style="list-style-type: none"> • Identify the three shapes of bacteria • Describe the role of bacteria in maintaining health in the digestive systems and other parts of the body • Identify ways that the body fights infectious bacteria • Describe how antibiotics can be used to fight bacteria • Describe how some bacteria can become resistant to antibiotics <p><i>(11C) summarize the role of microorganisms in both maintaining and disrupting the health of both organisms and ecosystems</i></p>	<p>BIO_11_Microorganisms Everywhere BIO_11_Antibiotics</p>
<p>11 The student knows that organisms maintain homeostasis.</p> <p>11D Summarize the role of microorganisms in maintaining and disrupting equilibrium. Including</p> <ul style="list-style-type: none"> • Diseases in plants and animals • Decaying process in an ecosystem 	<p>Including</p> <ul style="list-style-type: none"> • Bacterial & Viral diseases <p>NOTE: Mention positive roles of microorganisms such as lactobacillus in the intestinal tract or nitrogen fixation.</p>	<p>BIO_11_Friendly Bacteria Lab</p>
<p>3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>3A Analyze, review, and critique scientific explanations,</p>	<p>NOTE: Can use debates on current topics and reading/discussing current events.</p> <p><i>(3A) in all fields of science, analyze, evaluate, and</i></p>	

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<p>including hypotheses and theories, as to their strengths and weaknesses using scientific evidence and information.</p>	<p><i>critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student</i></p>	
<p>2 Uses scientific methods during fields & laboratory investigations.</p> <p>2D Communicate valid conclusions</p>	<p>Such as</p> <ul style="list-style-type: none"> • lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports. <p><i>(2H) communicate valid conclusions supported by the data through methods such as lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.</i></p>	
<p>3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>3D Describe connection between biology and future careers.</p>	<p>Such as pathologist, physician, pharmacist, water quality testing.</p>	
<p>3 Uses critical thinking and scientific problem solving to make informed decisions.</p> <p>3F Research and describe the history of biology and contributions of scientists</p>	<p>Such as Sir Alexander Fleming, Louis Pasteur, Heinrich Hermann Robert Koch, Jonas Salk, Albert Bruce Sabin</p>	
<p>5 The student knows how an organism grows and how specialized cells, tissues, and organs develop.</p> <p>5C Sequence the levels of organization in multicellular organisms to relate the parts to each other and to the whole.</p>	<p>Including (in sequence)</p> <ul style="list-style-type: none"> • Atom, Molecule, Organelle, Cell, Tissue, Organ, Organ system, Organism, Population, Community, Ecosystem, Biome, Biosphere <p><i>(10C) analyze the levels of organization in biological systems and relate the levels to each other and to the whole system.</i></p>	