

Unit # - 6 – Bacteria and Viruses (3 weeks)

Standards Addressed	Student Learning Objectives For this Unit	Content Skills and Knowledge	Learning Activities and Instructional Strategies
<p>NSES Standards: Life Science Science as Inquiry Science & Technology History & Nature of Science</p> <p>PA STEE Standards: 3.2.10.A (sci. k) 3.2.10.B (app k) 3.2.10 C (meth) 3.3.10.A (liv frms) 3.3.10 B (str/fnc) 3.3.10.C (inherit) 3.3.10.D (evo) 3.6.10.A (biotech) 3.7.10.A (tools) 3.8.10 C (imp)</p> <p>1.2 read crit 1.4 writing 1.8 presentation</p> <p>2.2 comp/estimation 2.3 measurement/est 2.5 prob solving 2.6 data analysis</p>	<p>Students will be able to:</p> <ul style="list-style-type: none"> ▪ Describe the structure of bacteria. ▪ Describe the factors that are used to describe prokaryotes. ▪ Explain why bacteria are vital to maintaining the living world. ▪ Describe the structure of a virus. ▪ Explain how viruses cause infection. ▪ Explain how bacteria cause disease. ▪ Describe how bacterial growth can be controlled. ▪ Explain how viruses cause disease. ▪ Explore basic immune response. <p>Note: The honors class would....</p> <ul style="list-style-type: none"> ▪ Understand the role that Louis Pasteur and others played in the formation of the germ theory. ▪ Explore the use of viruses and bacteria as a scientific tool. ▪ Understand antibiotic resistance ▪ Read and discuss “The Hot Zone” by Richard Preston 	<p>Knowledge:</p> <ul style="list-style-type: none"> ▪ Eubacteria and Archaeobacteria ▪ Bacilli, cocci, and spirilla ▪ Heterotrophs and Autotrophs ▪ Binary fission, conjugation, and spore formation ▪ Decomposers and nitrogen fixers ▪ Capsid, bacteriophages ▪ Lytic and lysogenic infections ▪ Retroviruses <p>Skills:</p> <ul style="list-style-type: none"> ▪ Sketch the life cycle of a bacteriophage. ▪ Use gram staining to identify bacteria 	<p>Lab or Demonstration: Culturing Bacteria Modeling the spread of disease Infecting Plants with the Tobacco Mosaic Virus</p> <p>Reading: Biology of Prokaryotes Viral Diseases Viral Replication</p> <p>Worksheet: Bacteria: Interpreting Graphs Calculating Nanometers</p> <p>Technology: Microbe World: http://www.microbeworld.org/</p>

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Unit Modifications

- ❑ Viruses and Bacteria Reading
- ❑ Bacteria Worksheets
- ❑ Virus Worksheets

Unit Enrichments

- ❑ Prospecting with Extremophiles
- ❑ <http://www.accessexcellence.org/RC/AB/BA/1297xtremo.html>
- ❑ Biomining
- ❑ <http://www.accessexcellence.org/RC/AB/BA/1297xtremo.html>

Suggested Assessment Techniques for Unit

Core 1: Protein Synthesis: Replication, Transcription, and Translation
Core 2: The Origin of Eukaryotic Cells
Core 3: Core Concepts Assessment: Final Exam

Materials/Technology for Unit

- ❑ Microbe World: <http://www.microbeworld.org/>