

# Biology Curriculum Map

Patterson

Unit	Essential Questions/Learning Outcomes	Assessments	Standards	Resources
Unit 1 Intro to Biology and the Scientific Method  2 Weeks	<ul style="list-style-type: none"> <li>• What is the study of Biology?</li> <li>• How has the scientific method been used to gain evidence for scientific theories/facts?</li> <li>• Mastering lab safety</li> </ul>	Bell Work  Scaffolded Questioning  In Class Activities  End of Chapter Assessments		Textbook: Ch. 1  Various Internet Websites  Supplemental Texts
Unit 2 The Cell (Chemistry of Life and Cell Structure)  5 Weeks	<ul style="list-style-type: none"> <li>• Deep understanding of the structure and properties of matter</li> <li>• Construct/Model the outcome of simple chemical reactions through gain/loss of electrons</li> <li>• Understand energy changes during chemical reactions</li> <li>• Make connections to mass conservation during chemical reactions</li> <li>• Have an understanding of basic cell structure, including organelle functions and the purpose of cell membrane (life dependence on these characteristics)</li> </ul>	Bell Work  Scaffolded Questioning  In Class Activities  End of Chapter Assessments	HS-PS1-1 HS-PS1-3 HS-PS1-8 HS-PS2-6 HS-PS1-2 HS-PS1-4 HS-PS1-5 HS-PS1-6 HS-PS1-7	Textbook: Ch. 6, 7  Various Internet Websites  Supplemental Texts
Unit 3 Cellular Energy	<ul style="list-style-type: none"> <li>• Understand the transformation of energy for use of living organisms (metabolism)</li> </ul>	Bell Work	HS-LS1-1 HS-LS1-2 HS-LS1-5	Textbook: Ch. 8

5 Weeks	<ul style="list-style-type: none"> <li>• Model cellular Respiration pathways (aerobic vs. anaerobic)</li> <li>• Model photosynthesis showing transformation of light energy to chemical energy</li> <li>• Identification of macromolecules and an understanding of their construction and role in living organisms</li> </ul>	<p>Scaffolded Questioning</p> <p>In Class Activities</p> <p>End of Chapter Assessments</p>	<p>HS-LS1-6 HS-LS1-7 HS-LS2-3 HS-LS2-5</p>	<p>Various Internet Websites</p> <p>Supplemental Texts</p>
<p>Unit 4 Cellular Growth and Division</p> <p>3 Weeks</p>	<ul style="list-style-type: none"> <li>• Understand and model cellular division (Mitosis)</li> <li>• Understand probability of variation occurring through mutations and regulations cells undergo to prevent these</li> </ul>	<p>Bell Work</p> <p>Scaffolded Questioning</p> <p>In Class Activities</p> <p>End of Chapter Assessments</p>	<p>HS-LS1-4 HS-LS3-3</p>	<p>Textbook: Ch. 9</p> <p>Various Internet Websites</p> <p>Supplemental Texts</p>
<p>Unit 5 Genetics (Formation of Gametes, Inheritance, Molecular Genetics)</p> <p>7 weeks</p>	<ul style="list-style-type: none"> <li>• Conceptualizing the variation among gametes providing survivability among groups of organisms</li> <li>• Modeling meiosis and showing how/were variations occur</li> <li>• Understanding trait inheritance</li> <li>• Predicting the probability of trait inheritance (Mendelian Genetics)</li> <li>• Understanding errors that may occur during meiosis resulting in genetic defects/disorders</li> </ul>	<p>Bell Work</p> <p>Scaffolded Questioning</p> <p>In Class Activities</p> <p>End of Chapter Assessments</p>	<p>HS-LS3-1 HS-LS3-2 HS-LS3-3</p>	<p>Textbook: Ch. 10, 11, 12</p> <p>Various Internet Websites</p> <p>Supplemental Texts</p>

	<ul style="list-style-type: none"> <li>• Understanding role of environmental factors affecting meiosis</li> <li>• Following traits that are directly linked to sex-chromosomes</li> <li>• Developing opinions based on facts about genetic testing and altering genetic outcomes</li> <li>• Model the structure of DNA and understand how this structure determines characteristics</li> <li>• Have a deep understanding of the Central Dogma of Biology (DNA -&gt; RNA -&gt; proteins)</li> </ul>			
<p>Unit 6 History of Biological Diversity and Evolution</p> <p>5 weeks</p>	<ul style="list-style-type: none"> <li>• Have an understanding of the evidence supporting the origin of life and evolution through natural selection</li> <li>• How do organisms with advantageous traits tend to increase in proportion to organisms without those traits?</li> <li>• How can environmental changes result in the development of new species or the extinction of other species?</li> <li>• Find patterns of evolution and make predictions based on them</li> <li>• Classify organisms based on their traits</li> </ul>	<p>Bell Work</p> <p>Scaffolded Questioning</p> <p>In Class Activities</p> <p>End of Chapter Assessments</p>	<p>HS-LS4-1 HS-LS4-2 HS-LS4-3 HS-LS4-4 HS-LS4-5 HS-LS2-8</p>	<p>Textbook: Ch. 14, 15</p> <p>Various Internet Websites</p> <p>Supplemental Texts</p>

	<ul style="list-style-type: none"> <li>• Have an understanding of hierarchy in classification (Using Binomial Nomenclature)</li> </ul>			
Unit 7 Ecology and Ecosystems  5 weeks	<ul style="list-style-type: none"> <li>• Have an understanding of living vs. nonliving</li> <li>• Recognize patterns between living organisms and their environment</li> <li>• Model the cycles of matter (Water, nitrogen, etc.)</li> <li>• Show how energy flows from organism to organisms, some is lost to the environment (Food chain/web/ pyramid)</li> <li>• Understand organisms' ability to maintain homeostasis</li> <li>• What is carrying capacity and how does it affect communities?</li> </ul>	Bell Work  Scaffolded Questioning  In Class Activities  End of Chapter Assessments	HS-LS2-1 HS-LS2-2 HS-LS2-6 HS-LS2-7 HS-LS2-8 HS-LS4-6 HS-LS2-5 HS-LS2-6	Textbook: Ch. 2, 3, 4  Various Internet Websites  Supplemental Texts
Unit 8 Human Sustainability  3 Weeks	<ul style="list-style-type: none"> <li>• How have human affected the environment and biodiversity</li> <li>• Create possible technological solutions to human activities</li> <li>• Create illustrations of relationships among natural resource management and human population</li> </ul>	Bell Work  Scaffolded Questioning  In Class Activities  End of Chapter Assessments	HS-ESS3-1 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4 HS-ESS3-6	Various Internet Websites  Supplemental Texts