

## Biology Subject Group Overview

Unit Name	Structure and Function of Living Systems	Energy and Matter in Ecosystems	Structure & Function of Molecular Genetics	Patterns of Heredity & Selection	Patterns in Living Systems	Stability and Change in Populations	Stability and Change in Ecosystems
Time Frame	7 weeks	4.5 weeks	6.5 weeks	6 weeks	2 weeks	4 weeks	6 weeks
Standards	SB1.a,c,d	SB1.a,e; SB5.b	SB1.a,b,c; SB2.a,b,c	SB1.b; SB2.b; SB3.a,b,c	SB4.a,b,c; SB6.a	SB6.a,b,c,d,e	SB5.a,b,c,d,e
Approaches To Learning Instructional Strategies	<p><b>SEP</b> Construct explanations &amp; ask questions</p> <p>Develop and use models</p> <p>Plan &amp; carry out investigations</p> <p>Engage in argument from evidence</p> <p>Obtaining, evaluating &amp; communicating information</p> <p><b>ATL</b> Research Skills Communication Skills</p>	<p><b>SEP</b> Construct explanations &amp; ask questions</p> <p>Develop and use models</p> <p>Plan &amp; carry out investigations</p> <p>Engage in argument from evidence</p> <p>Obtaining, evaluating &amp; communicating information</p> <p><b>ATL</b> Research Skills Collaboration Skills Communication Skills</p>	<p><b>SEP</b> Construct explanations &amp; ask questions</p> <p>Develop and use models</p> <p>Engage in argument from evidence</p> <p>Plan &amp; carry out investigations</p> <p>Construct explanations &amp; ask questions</p> <p>Obtaining, evaluating &amp; communicating information</p> <p><b>ATL</b> Collaboration Skills Communication Skills</p>	<p><b>SEP</b> Use mathematics and computational thinking</p> <p>Develop and use models</p> <p>Engage in argument from evidence</p> <p>Plan &amp; carry out investigations</p> <p>Analyze and interpret data</p> <p>Obtaining, evaluating, and communicating information</p> <p><b>ATL</b> Collaboration Skills Communication Skills</p>	<p><b>SEP</b> Construct explanations &amp; ask questions</p> <p>Develop and use models</p> <p>Engage in argument from evidence</p> <p>Plan &amp; carry out investigations</p> <p>Analyze and interpret data</p> <p>Obtaining, evaluating &amp; communicating information</p> <p><b>ATL</b> Research Skills Communication Skills</p>	<p><b>SEP</b> Construct explanations &amp; ask questions</p> <p>Develop and use models</p> <p>Engage in argument from evidence</p> <p>Analyze and interpret data</p> <p>Use mathematics and Computational Thinking</p> <p>Obtaining, evaluating &amp; communicating information</p> <p><b>ATL</b> Research Skills Communication Skills</p>	<p><b>SEP</b> Plan &amp; carry out investigations</p> <p>Analyze and interpret data</p> <p>Construct explanations</p> <p>Develop and use models</p> <p>Engage in argument from evidence</p> <p>Obtaining, evaluating, and communicating information</p> <p><b>ATL</b> Research Skills Communication Skills</p>
Statement of Inquiry	The features that define groups of unicellular organisms have overlapped, today sophisticated techniques such as DNA sequencing are tools used by taxonomists.	Energy is never lost, it is conserved or transferred from one system to another system.  <b>Phenomenon:</b> The interdependence of all organisms on one	Sickle cell disease is the most common inherited blood disorder, affecting 70,000 to 80,000 Americans.  <b>Phenomenon:</b> Sickle cell disease is a genetic mutation that may be	Scientists in the field of genetics are still learning new information about how heredity works; the study of heredity occurs in laboratories all over the world.	Over 200 viruses infect humans, they are diverse and evolve over time faster than their hosts.  <b>Phenomenon:</b> Antibiotics do not work on viruses and	The theory of evolution is based on the idea that all species are related and gradually change over time.  <b>Phenomenon:</b> New aspects of evolution have come to light with	Modifying human activities can cause severe irreversible effects.  <b>Phenomenon:</b> Human activities can cause major shifts in ecosystems.

## Biology Subject Group Overview

	<b>Phenomenon:</b> Protists have always been a challenging group to classify. An amazing variety of structure & function patterns are found in these aquatic organisms	another is based on their environment.	reversed by gene therapy.	<b>Phenomenon:</b> Non-identical twin siblings do not look like each other or their parents.	may become less effective on bacteria over time.	the introduction of advanced technologies that didn't exist during Darwin's era.	
<b>Global Context</b>	Scientific and Technical Innovation: The Biological Revolution	Scientific and Technical Innovation: The Biological Revolution	Scientific and Technical Innovation: The Biological Revolution	Orientation in Time and Space: Evolution, constraints and adaptation	Orientation in Time and Space: Evolution, constraints and adaptation	Orientation in Time and Space: Evolution, constraints and adaptation	Globalization and Sustainability: Human Impact on the Environment
<b>Key Concepts</b>	Structure & Function (MYP/CCC) Patterns (CCC) Matter & Energy (CCC)	Energy & Matter (MYP/CCC) Structure & Function (CCC) Cause & Effect (CCC)	Structure & Function (CCC) Systems & System Models (CCC & MYP) Cause & Effect (CCC)	Patterns (CCC) Scale, Proportion & Quantity (CCC) Systems & System Models (CCC & MYP)	Stability & Change (MYP/CCC) Cause & Effect (CCC) Patterns (CCC)	Transformation (MYP) Cause & Effect (CCC) Patterns (CCC)	Scale, Proportion & Quantity (CCC) Matter & Energy (CCC) Stability & Change (CCC & MYP)
<b>Related Concepts</b>	Form & Model	Environmental & Interaction	Form & Models	Form & Models	Patterns & Transformation	Environmental & Interaction	Environment & Interaction
<b>Design Cycle Transdisciplinary</b>	<b>CORE IDEAS</b> <ul style="list-style-type: none"> <li>● Macromolecules</li> <li>● Enzymes</li> <li>● Cell Theory</li> <li>● Prokaryotes/Eukaryotes</li> <li>● Plant/Animal Cells</li> <li>● Cell Structure</li> <li>● Cell Organelles</li> <li>● Cell Membrane &amp; Transport</li> <li>● Homeostasis</li> </ul>	<b>CORE IDEAS</b> <ul style="list-style-type: none"> <li>● Food Chains/Webs</li> <li>● Energy Pyramids</li> <li>● Biogeochemical Cycles</li> <li>● Cycling of Matter</li> <li>● Human Impact</li> <li>● Organelle Roles in Using and Making Energy</li> <li>● Photosynthesis</li> <li>● Cell Respiration</li> </ul>	<b>CORE IDEAS</b> <ul style="list-style-type: none"> <li>● Structure of DNA</li> <li>● DNA replication</li> <li>● Cellular reproduction (binary fission, mitosis)</li> <li>● Cancer</li> <li>● Synthesizing proteins</li> <li>● Gene mutations</li> <li>● Biotechnology</li> <li>● Asexual Reproduction</li> </ul>	<b>CORE IDEAS</b> <ul style="list-style-type: none"> <li>● Sexual Reproduction (binary fission, mitosis, meiosis)</li> <li>● Karyotypes</li> <li>● Chromosomal Mutations</li> <li>● Mendel's Laws</li> <li>● Dihybrid Crosses</li> <li>● Non-Mendelian Genetics</li> <li>● Biodiversity &amp; Patterns in Selection</li> </ul>	<b>CORE IDEAS</b> <ul style="list-style-type: none"> <li>● Domains and Kingdoms</li> <li>● Living vs Nonliving</li> <li>● Sexual vs Asexual</li> <li>● Cladograms</li> <li>● Phylogenetic Trees</li> <li>● Virus/ Vaccine</li> <li>● Earth History</li> <li>● Simple to Complex Organisms</li> <li>● Endosymbiosis</li> <li>● Evidence to support Endosymbiosis</li> </ul>	<b>CORE IDEAS</b> <ul style="list-style-type: none"> <li>● Mechanisms of Evolution</li> <li>● Mutation</li> <li>● Natural Selection</li> <li>● Hardy Weinberg</li> <li>● Biological/Pesticide Resistance</li> <li>● Evidence Evolution</li> <li>● Fossils</li> <li>● Comparative Anatomy</li> <li>● Embryology</li> <li>● Speciation</li> <li>● Biodiversity</li> <li>● Gradualism vs Punctuated Equilibrium</li> </ul>	<b>CORE IDEAS</b> <ul style="list-style-type: none"> <li>● Ecosystems &amp; Adaptations</li> <li>● Human Population Growth</li> <li>● Human Impact on Land Use</li> <li>● Human Impact on Agriculture</li> <li>● Human Impact on Ecosystems &amp; Biodiversity</li> <li>● Natural Impact on Ecosystems &amp; Biodiversity</li> </ul>

### Biology Subject Group Overview

<b>MYP Assessments/ Performance Tasks</b>	<p>Common Summative Assessments</p> <p>CFA Cell Transport CFA Macromolecules Structure and Function of Living Systems Summative</p> <p>MYP B &amp; C: Design lab in Cell Transport</p>	<p>Common Summative Assessments</p> <p>CFA Energy and Matter in Ecosystem Summatives</p> <p>MYP A: Short answer question(s) on Summative</p> <p>MYP B/C: PS Design Lab</p> <p>MYP D: Human Impact on Cycles</p>	<p>Common Summative Assessments</p> <p>CFA DNA Structure and Replication</p> <p>Structure and Function of Molecular Genetics Summative</p> <p>MYP A: Short answer on summative 1 (topic: cell cycle and cancer)</p> <p>MYP D: GMO Debate</p>	<p>Common Summative Assessments</p> <p>CFA Growth and Heredity Growth and Heredity Summative</p> <p>MYP A: Short answer on summative (genetics)</p>	<p>Common Summative Assessments</p> <p>CFA Viruses and Antibiotic Resistance Patterns in Living Things Summative</p> <p>MYP A: Short answer question(s) on summative</p> <p>MYP C: Amino Acid/DNA Sequences to build a cladogram</p>	<p>Common Summative Assessments</p> <p>CFA Stability and Change in Populations Summative</p> <p>MYP A: Antibiotic Resistance Lab CER</p> <p>MYP C: Natural Selection lab</p>	<p>Common Summative Assessments:</p> <p>CFA Stability and Change in Ecosystems Summative</p> <p>MYP B &amp; C: Design Lab in factors affecting biodiversity</p> <p>MYP D: Human impact Essay</p>
<b>Differentiation For Tiered Learners</b>	Marietta City Schools teachers provide specific differentiation of learning experiences for all students. Details for differentiation for learning experiences are included on the district unit planners.						
<b>Course Levels</b>	<b>Marietta City Schools offers Enhanced, Honors, Accelerated, and AP classes to provide differentiated learning experiences for students.</b>						