

## Environmental Science Subject Group Overview

| Unit Name                                       | Ecosystems  | Climate Change   | Energy Resources  | Impacts of the Human Population  |
|---|---|--|---|--|
| Time Frame                                      | 13 weeks  | 6 weeks  | 8 weeks   | 8 weeks  |
| Standards                                       | SEV1.a, d, e, SEV2.c, d, SEV4.a, b, c   | SEV2.a, b, SEV4.a, b   | SEV3.a, b, c, d   | SEV5.b, c, SEV4.a, c, SEV5.d   |
| Approaches To Learning Instructional Strategies | <p><b>SEP</b></p> <ul style="list-style-type: none"> <li>Developing and Using Models</li> <li>Engaging in Argument from evidence</li> <li>Obtaining, evaluating, and communicating information</li> <li>Collect and analyze data identify solutions and make informed decisions</li> </ul> <p><b>ATL</b></p> <p>Research Skills<br/>Thinking Skills<br/>Collaboration Skills<br/>Communication Skills</p> | <p><b>SEP</b></p> <ul style="list-style-type: none"> <li>Develop and Using Models</li> <li>Obtaining, evaluating, and communicating information</li> <li>Analyzing and interpreting data</li> <li>Make guesses, ask what if questions and generate testable hypotheses</li> </ul> <p><b>ATL</b></p> <p>Research Skills<br/>Thinking Skills<br/>Collaboration Skills<br/>Communication Skills</p>   | <p><b>SEP</b></p> <ul style="list-style-type: none"> <li>Develop and Using Models</li> <li>Constructing explanations and designing solutions</li> <li>Collect and analyze data identify solutions and make informed decisions</li> <li>Obtaining, evaluating, and communicating information</li> </ul> <p><b>ATL</b></p> <p>Research Skills<br/>Thinking Skills<br/>Collaboration Skills<br/>Communication Skills</p>                             | <p><b>SEP</b></p> <ul style="list-style-type: none"> <li>Engaging in Argument from evidence</li> <li>Develop and Using Models</li> <li>Obtaining, evaluating, and communicating information</li> <li>Analyzing and interpreting data</li> <li>Make guesses, ask what if questions and generate testable hypotheses</li> </ul> <p><b>ATL</b></p> <p>Research Skills<br/>Thinking Skills<br/>Collaboration Skills<br/>Communication Skills</p> |
| Statement of Inquiry                            | <p>Ecosystems describe the web or network of relations among organisms at different scales of organization.</p> <p><b>Phenomenon:</b> An ecosystem is a group of organisms and nonliving components linked by processes of energy transfer and cycling of components and, unless we understand the links, we cannot limit damage, conserve or restore.</p>  | <p>Climate change is caused by factors such as biotic processes, variations in solar radiation received by Earth, plate tectonics, and volcanic eruptions. Certain human activities have been identified as primary causes of ongoing climate change, often referred to as global warming.</p> <p><b>Phenomenon:</b> If emissions continue to rise at the present rate, the global average surface temperature will rise between two and six degrees by the end of this century due to the amplification of the greenhouse effect.</p> | <p>A renewable energy source such as biomass is sometimes regarded as a good alternative to providing heat and electricity with fossil fuels. Biofuels are not inherently ecologically friendly for this purpose, while burning biomass is carbon-neutral, air pollution is still produced.</p> <p><b>Phenomenon:</b> Nonrenewable energy sources include fossil fuels that come from beneath the ground and take thousands of years to form.</p> | <p>Unchecked human population growth could be a recipe for doom for the planet and its inhabitants. And it has reached staggering levels in recent years—the number of people on the planet has doubled from 3.5 billion to seven billion in just a half century.</p> <p><b>Phenomenon:</b> Human overpopulation is a major driving force behind the loss of ecosystems, such as rainforests, coral reefs, wetlands and Arctic ice.</p>      |
| Global Context                                  | Scientific and Technical Innovation   | Scientific and Technical Innovation  | Fairness and Development  | Globalization and Sustainability   |

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|--|---|--|--|--|
| <b>Key Concepts</b>                        | Cause & Effect (CC)<br>Stability & Change (CC & MYP)<br>Patterns (CC)<br>Matter & Energy (CC)<br>Scale, Proportion & Quantity (CC)<br>Structure & Function (CC)   | Patterns (CC)<br>Cause & Effect (CC)<br>Systems & System Models (CC & MYP)<br>Stability & Change (CC & MYP)  | Matter & Energy (CC)<br>Structure & Function (CC)<br>Stability & Change (CC & MYP)<br>Systems & System Models (CC & MYP)   | Structure & Function (CC)<br>Systems & System Models (CC & MYP)<br>Matter & Energy (CC)<br>Scale, Proportion & Quantity (CC)<br>Patterns (CC)  |
| <b>Related Concepts</b>                    | Environment & Movement  | Patterns & Environment   | Energy & Environment   | Form & Models  |
| <b>Design Cycle Transdisciplinary</b>      | <b>CORE IDEAS</b> <ul style="list-style-type: none"> <li>● Levels of biological organization</li> <li>● Complexity within ecosystems</li> <li>● Aquatic biomes in Georgia</li> <li>● Adaptations</li> <li>● Terrestrial biomes</li> <li>● Biodiversity</li> <li>● Energy</li> </ul> | <b>CORE IDEAS</b> <ul style="list-style-type: none"> <li>● Short term Natural Cyclic fluctuations</li> <li>● Long term Natural Cyclic fluctuations</li> <li>● Atmospheric Chemistry</li> <li>● Greenhouse Effect</li> <li>● Human Impact on Natural Resources</li> </ul> | <b>CORE IDEAS</b> <ul style="list-style-type: none"> <li>● Energy Resources</li> <li>● Renewable Resources</li> <li>● Nonrenewable Resources</li> <li>● Energy Consumption</li> <li>● Alternative Resources</li> </ul> | <b>CORE IDEAS</b> <ul style="list-style-type: none"> <li>● Global Patterns of population growth</li> <li>● Demographic transitions in developing and developed countries</li> <li>● Demographic Diagrams</li> <li>● Ecological Footprints</li> </ul> |
| <b>MYP Assessments / Performance Tasks</b> | Unit 1 Common Assessment<br>Criterion A & D   | Unit 2 Common Summative Assessment<br>Criterion A & D  | Unit 3 Common Summative Assessment<br>Criterion B & C  | Unit 4 Common Summative Assessment<br>Criterion B & C  |
| <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>  |  |  |  |