Environmental Science Subject Group Overview

Semester 1: 18 weeks ***Units 0- Midterm***						***Semester 2: 18 weeks*** ***Units 4- Final Exam***			
Unit Name	U1: Science Skills	U2: Planet Earth	U3: Functional Ecosystems	U4: Earth's Climate	Midterm Exam Review	U5: Human Population	U6: Energy Resources	U7: Human Impact	Final Exam Review
Time Frame	2 Weeks 5 A and B Days	3 Weeks 10 A and B Days	7 Weeks 17 A and B Days	4 weeks 13 A and B Days	2 Week 5 A and B Days	5 weeks 12 A and B Days	5 weeks 12 A and B Days	6 weeks 15 A and B Days	2 Week 5 A and B Days
Standards	**NGSS Appendix F** **NGSS Appendix G**	SEV1.a.c.e	SEV1.b.d., SEV2. c, d	SEV2.a.b.		SEV5.a.b.c, SEV4.c.	SEV3.a, b, c, d	SEV4.a.b, SEV5.d.	
Approaches To Learning Instructional Strategies	**SEP** • Asking Questions and Defining Problems • Develop and use Models • Plan and Carry Out Investigation • Analyzing and Interpreting Data • Constructing Explanations and Designing Solutions • Engaging in Argument from Evidence • Obtain, Evaluate, and Communicate Information **CCC** • Patterns • Cause and Effect • Scale, Proportion, and Quantity • Systems and System Models • Energy and Matter: Flows, Cycles, and Conservation • ***Structure and Function*** • Stability and Change	**SEP** • Analyze and Interpreting Data • Obtain, Evaluate and Communicate Information **CCC** • Scale, Proportion, and Quantity • Systems and System Models • Energy and Matter • Stability and Change • Structure and Function	**SEP** • Analyze and Interpreting Data • Develop and Use Models • Plan and Carry Out Investigations **CCC** • Patterns • Cause and Effect • Scale, Proportion, and Quantity • Systems and System Models • Energy and Matter: Flows, Cycles, and Conservation • Structure and Function • Stability and Change	**SEP** • Developing and Using Models • Analyze and Interpreting Data • Engaging in Argument from evidence • Obtaining, evaluating, and communicating information • Collect and analyze data identify solutions and make informed decisions **CCC** • Patterns • Cause and Effect • Scale, Proportion, and Quantity • Systems and System Models • Energy and Matter: Flows, Cycles, and Conservation • ***Structure and Function*** • Stability and Change		**SEP** • Develop and Using Models • Obtaining, evaluating, and communicating information • Analyzing and interpreting data • Make guesses, ask what if questions and generate testable hypotheses	**SEP** • Asking Questions and Defining Problems • Develop and use Models • Plan and Carry Out Investigation • Analyzing and Interpreting Data • Constructing Explanations and Designing Solutions • Engaging in Argument from Evidence • Obtain, Evaluate, and Communicate Information **CCC** • Cause and Effect • Scale, Proportion, and Quantity • Systems and System Models • Energy and Matter: Flows, Cycles, and Conservation • ***Structure and Function***	**SEP** • Engaging in Argument from evidence • Develop and Using Models • Obtaining, evaluating, and communicating information • Analyzing and interpreting data • Make guesses, ask what if questions and generate testable hypotheses **CCC** • Patterns • Cause and Effect • Scale, Proportion, and Quantity • Systems and System Models • Energy and Matter: Flows, Cycles, and Conservation • ***Structure and Function*** • Stability and Change	

Published: 8,2024 Resources, materials, assessments not linked to SGO or unit planner will be reviewed at the local school level.

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Statement of Inquiry	The acquisition and application of scientific knowledge rely on the systematic use of evidence and method, driving innovation and understanding of the natural world. Phenomena: The misuse and overuse of antibiotics have led to the emergence of antibiotic-resistant bacteria, posing a significant threat to global health.	By exploring the relationships between Earth's geosphere, hydrosphere, atmosphere, and biosphere, students will investigate how natural and anthropogenic activities influence these systems, leading to both short-term and long-term environmental changes. Phenomena: Climate change, driven by natural and anthropogenic activities, significantly impacts these reefs, leading to both short-term and long-term environmental changes.	The intricate interactions within ecosystems are essential for maintaining balance and biodiversity. The decline of pollinator populations demonstrates how changes in one part of an ecosystem can disrupt energy flow and impact global sustainability. By investigating these relationships, we can design and implement solutions to promote an ecosystem's resilience. Phenomena: The decline in pollinator populations highlights the intricate interactions within ecosystems and demonstrates how disruptions can impact energy flow and global sustainability.	The rapid melting of Arctic ice highlights the interconnectedness of Earth's atmospheric and climate systems and the significant impact of human activities on global climate change. Phenomena: The rapid melting of Arctic ice serves as a critical indicator of global climate change, illustrating the interconnectedness of Earth's atmospheric and climate systems.		The different stages of human population growth during and before the Industrial Revolution led to an increase in demand for resources, particularly food. These innovations led to the increased food production, they have also had significant ecological consequences, both locally and globally. Phenomena: Innovations in agriculture have met the demands of a growing population, but have also led to significant ecological consequences both locally and globally.	The city of Atlanta is experiencing an energy crisis due to a combination of factors, including aging infrastructure, increased demand, and extreme weather events. The city council is considering various options to address this crisis, yet each option has potential risks and benefits, and the decision will have significant environmental, economic, and social implications for the city's residents. Phenomena: The city of Atlanta is facing an energy crisis driven by aging infrastructure, increased demand, and extreme weather events.	The Great Pacific Garbage Patch, an area in the North Pacific Ocean where marine debris accumulates, has grown exponentially in recent decades. This accumulation of plastic and other waste poses a significant threat to marine life and ecosystems. International groups, governments, local businesses and individuals are looking for solutions to reduce their impact and increase sustainability. Phenomena: The Great Pacific Garbage Patch, a mass of plastic garbage twice the size of Texas, has expanded dramatically over recent decades.	
Global Context	• *Scientific and technical innovation*	• *Identities and relationships*	• *Orientation in space and time*	• *Orientation in space and time*		• *Personal and cultural expression* • *Scientific and technical innovation* • *Fairness and development*	• *Scientific and technical innovation* • *Fairness and development* • *Globalization and sustainability*	• *Personal and cultural expression* • *Fairness and development* • *Globalization and sustainability*	

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Key Concepts	• *Communication* • *Connections* • *Creativity* • *Form* • *Logic* • *Systems*	• *Communities* • *Connections* • *Relationships* • *Systems* • *Time, Place, and Space*	• *Communities* • *Connections* • *Relationships* • *Systems* • *Time, Place, and Space*	• *Communities* • *Connections* • *Relationships* • *Systems* • *Time, Place, and Space* • *Global Interactions*		• *Change* • *Communication* • *Communities* • *Culture* • *Development* • *Global Interactions* • *Relationships* • *Systems*	• *Change* • *Communication* • *Communities* • *Culture* • *Development* • *Global Interactions* • *Relationships* • *Systems*	• *Change* • *Communication* • *Communities* • *Culture* • *Development* • *Global Interactions* • *Relationships* • *Systems*	
Related Concepts	• *Cause and Effect*	• *Systems* • *Environment* • *Balance*	• *Systems* • *Balance* • *Interactions* • *Transformation*	• *Systems* • *Cause and Effect* • *Environment* • *Interactions*		• *Development* • *Sustainability* • *Cause and Effect* • *Energy*	• *Development* • *Sustainability* • *Cause and Effect* • *Energy* • *Transformation*	• *Development* • *Sustainability* • *Cause and Effect* • *Energy* • *Transformation*	
Design Cycle Trans-disciplinary	**Core Ideas** • Develop skills in asking scientific questions and defining problems. • Practice planning and carrying out investigations. • Learn to analyze and interpret data. • Understand the importance of constructing explanations and designing solutions. • Engage in arguments from evidence. • Obtain, evaluate, and communicate scientific information.	**Core Ideas** • Levels of Biological Organization • Biogeochemical Cycles • Earth as a Closed System • Aquatic Biomes in Georgia	**Core Ideas** • Energy Transfers in Ecosystems • Physical Factors and Organismal Adaptations • Ecological Succession • Value of Biodiversity in Ecosystem Resilience	**Core Ideas** • Natural Cyclic Fluctuations and Climate Change • Changes in Atmospheric Chemistry and the Greenhouse Effect		**Core Ideas** • Quality of Life and Historical Human Impact on Ecosystems • Global Patterns of Population Growth • Ecological Effects of Mankind's Innovations • Human Population Growth and Food Demand	**Core Ideas** • Renewable and Nonrenewable Energy Sources • Risks and Benefits of Energy Sources • Sustainability Potential of Energy Resources • Designing a Sustainable Energy Plan	**Core Ideas** • Human Activities and Natural Resources • Solutions to Reduce Human Impact • Personal Sustainability Plans • Designing a Sustainable Energy Plan	
MYP Assessments/ Performance Tasks	Unit 1 Common Assessment CFA 08/15-16	Unit 2 Common Assessment Criterion B & C CFA 08/23-26 CSA 09/5-6	Unit 3 Common Assessment Criterion A & D CFA 10/03-04 CSA 10/28-29	Unit 4 Common Assessment Criterion A & D CFA 11/21-22 CSA 12/5-6	***Date TBD***	Unit 5 Common Assessment Criterion A & D CFA 01/27-28 CSA 02/13-14	Unit 6 Common Assessment Criterion B & C CFA 03/10-11 CSA 03/24-25	Unit 7 Common Assessment Criterion B & C CFA 04/17-18 CSA 05/01-02	***Date TBD***
Differentiation For Tiered Learners	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.								
Course Levels	**Marietta City Schools offers Enhanced, Honors, Accelerated, and AP classes to provide differentiated learning experiences for students.**								