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| **Content Area** | Science | | | **Grade Level** | 6th Grade | | |
| **Course Name/Course Code** |  | | | | | | |
| **Standard** | **Grade Level Expectations (GLE)** | | | | | | **GLE Code** |
| 1. Physical Science | 1. All matter is made of atoms, which are far too small to see directly through a light microscope. Elements have unique atoms and thus, unique properties. Atoms themselves are made of even smaller particles | | | | | | SC09-GR.6-S.1-GLE.1 |
| 1. Atoms may stick together in well-defined molecules or be packed together in large arrangements. Different arrangements of atoms into groups compose all substances. | | | | | | SC09-GR.6-S.1-GLE.2 |
| 1. The physical characteristics and changes of solid, liquid, and gas states can be explained using the particulate model | | | | | | SC09-GR.6-S.1-GLE.3 |
| 1. Distinguish among, explain, and apply the relationships among mass, weight, volume, and density | | | | | | SC09-GR.6-S.1-GLE.4 |
| 1. Life Science | 1. Changes in environmental conditions can affect the survival of individual organisms, populations, and entire species | | | | | | SC09-GR.6-S.2-GLE.1 |
| 1. Organisms interact with each other and their environment in various ways that create a flow of energy and cycling of matter in an ecosystem | | | | | | SC09-GR.6-S.2-GLE.2 |
| 1. Earth Systems Science | 1. Complex interrelationships exist between Earth’s structure and natural processes that over time are both constructive and destructive | | | | | | SC09-GR.6-S.3-GLE.1 |
| 1. Water on Earth is distributed and circulated through oceans, glaciers, rivers, ground water, and the atmosphere | | | | | | SC09-GR.6-S.3-GLE.2 |
| 1. Earth’s natural resources provide the foundation for human society’s physical needs. Many natural resources are nonrenewable on human timescales, while others can be renewed or recycled | | | | | | SC09-GR.6-S.3-GLE.3 |
| **Colorado 21st Century Skills**    **Critical Thinking and Reasoning:** *Thinking Deeply, Thinking Differently*  **Information Literacy:** *Untangling the Web*  **Collaboration:** *Working Together, Learning Together*  **Self-Direction:** *Own Your Learning*  **Invention:** *Creating Solutions* | | **Reading & Writing Standards for Literacy**  **in Science and Technical Subjects 6 - 12**  **Reading Standards**   * Key Ideas & Details * Craft And Structure * Integration of Knowledge and Ideas * Range of Reading and Levels of Text Complexity   **Writing Standards**   * Text Types & Purposes * Production and Distribution of Writing * Research to Construct and Present Knowledge * Range of Writing | | | | | |
| **Unit Titles** | | | **Length of Unit/Contact Hours** | | | **Unit Number/Sequence** | |
| Changing Environments | | | 4-6 weeks | | | 1 | |
| Water | | | 4-6 weeks | | | 2 | |
| Building Blocks of Life | | | 4-6 weeks | | | 3 | |
| Environmental Systems | | | 4-6 weeks | | | 4 | |

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| **Unit Title** | Changing Environments | | **Length of Unit** | 4-6 weeks | |
| **Focusing Lens(es)** | Change  Interactions | **Standards and Grade Level Expectations Addressed in this Unit** | | | SC09-GR.6-S.2-GLE.1  SC09-GR.6-S.2-GLE.2  SC09-GR.6-S.3-GLE.1 |
| **Inquiry Questions (Engaging- Debatable):** | * How do changes in one (population) affect balance in an ecosystem? * How would life / ecosystems be different if Earth’s surface did not change? | | | | |
| **Unit Strands** | Life Science, Earth Systems Science | | | | |
| **Concepts** | change, equilibrium/stability, ecosystems, environment, population, energy, matter, flow, cycle, surface features, constructive/destructive forces, interaction, patterns | | | | |

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| **Generalizations**  **My students will Understand that…** | **Guiding Questions**  **Factual Conceptual** | |
| The interactions among organisms in an ecosystem facilitate the flow of energy and cycling of matter and follow predictable patterns. (SC09-GR.6-S.2-GLE.2-EO.c; IQ.2; N.3) | What biotic and abiotic factors comprise ecosystems? (SC09-GR.6-S.2-GLE.1-EO.c)  What are ways that we can describe and measure populations and ecosystems? (SC09-GR.6-S.2-GLE.1-EO.a)  How does a food web show the flow of energy through an ecosystem? patterns (SC09-GR.6-S.2-GLE.2-EO.b)  What “jobs” do organisms do to facilitate the flow of energy and cycling of matter? patterns (SC09-GR.6-S.2-GLE.2-EO.c; IQ.2) | How do biotic and abiotic factors interact in an ecosystem? (SC09-GR.6-S.2-GLE.1-EO.c)  Why are there generally more producers than consumers in an ecosystem? (SC09-GR.6-S.2-GLE.1-EO.c)  How does the flow of energy compare and contrast with the cycling of matter? patterns (SC09-GR.6-S.2-GLE.2-EO.c) |
| The interaction between Earth’s constructive and destructive forces explains both the pattern and changes in surface features on Earth. (SC09-GR.6-S.3-GLE.1-EO.a; IQ. 2; RA.1) | What constructive and destructive forces affect Earth’s surface features?  How does Earth’s surface change over time? (SC09-GR.6-S.3-GLE.1-EO.b,c; IQ.2; RA.2; N.2) | How do forces inside the Earth and on the surface build, destroy, and change Earth’s crust? (SC09-GR.6-S.3-GLE.1-EO.a; IQ. 1; RA.1)  How do changes in Earth’s surface alter the nonliving environment of ecosystems? (SC09-GR.6-S.3-GLE.1-EO.b; RA.1) |
| Changes in the environment can determine the survival of populations and the stability of ecosystems. (SC09-GR.6-S.2-GLE.1-EO.a; IQ.1) | What types of environmental changes can occur? (SC09-GR.6-S.2-GLE.1-EO.a)  What is meant by “equilibrium” of an ecosystem? (SC09-GR.6-S.2-GLE.1-EO.c; IQ.2) | How do environmental changes explain why populations decrease or increase? (SC09-GR.6-S.2-GLE.1-EO.a)  How do environmental changes affect the survival of individual organisms, populations and species? (SC09-GR.6-S.2-GLE.1-EO.a) |
| A general understanding of ecosystems and environmental change allows scientists to predict and model potential impacts on populations of organisms. (SC09-GR.6-S.2-GLE.1-EO.b, d; N.1) | How do models help scientists to predict future events? (SC09-GR.6-S.2-GLE.1-EO.d; RA.1; N.3) | How might future environmental changes affect the survival of individual organisms, populations and species? (SC09-GR.6-S.2-GLE.1-EO.d; N.3) and (SC09-GR.6-S.3-GLE.1-EO.ac, N.2) |

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| **Critical Content:**  **My students will Know…** | **Key Skills:**  **My students will be able to (Do)…** |
| * The difference between biotic and abiotic (SC09-GR.6-S.2-GLE.1-EO.c) * The reasons why there are generally more producers than consumers in an ecosystem (SC09-GR.6-S.2-GLE.1-EO.c) * How food webs help us visualize the flow of energy through and ecosystem (SC09-GR.6-S.2-GLE.2-EO.b) * Matter cycles within ecosystems (SC09-GR.6-S.2-GLE.2-EO.c; IQ.1) * Earth’s surface is constantly changing (SC09-GR.6-S.3-GLE.1-EO.c; IQ.1) * Examples of how forces inside the Earth contribute to changes in the surface of Earth’s crust (SC09-GR.6-S.3-GLE.1-EO.a; IQ.1) * The constructive and destructive forces brought about by changes to the Earth’s surface (SC09-GR.6-S.3-GLE.1-EO.a; IQ.1) * How environmental conditions affect the survival of individual organisms, populations and entire species (SC09-GR.6-S.2-GLE.1-EO.d; N.3) and (SC09-GR.6-S.3-GLE.1-EO.ac, N.2) | * Develop, communicate and justify an evidence-based explanation about why there generally are more producers than consumers in an ecosystem (SC09-GR.6-S.2-GLE.2-EO.a) * Design a food web diagram to show the flow of energy through an ecosystem (SC09-GR.6-S.2-GLE.2-EO.b) * Compare and contrast the flow of energy with the cycling of matter in ecosystems (SC09-GR.6-S.2-GLE.2-EO.c) * Gather, analyze and communicate an evidence-based explanation for the complex interaction between Earth’s constructive and destructive forces (SC09-GR.6-S.3-GLE.1-EO.a) * Gather, analyze and communicate evidence from text and other sources that explains the formation of surface features (SC09-GR.6-S.3-GLE.1-EO.b) * Use or create a computer simulation for planets’ changing surface (SC09-GR.6-S.3-GLE.1-EO.c) * Practice the collaborative inquiry process that scientists use to identify local evidence of constructive and destructive forces (SC09-GR.6-S.3-GLE.1; N.1) * Create and compare models of natural processes that affect structures (SC09-GR.6-S.3-GLE.1; N.2) * Interpret and analyze data about changes in environmental conditions (SC09-GR.6-S.2-GLE.1-EO.a) * Develop, communicate, and justify and evidence-based explanation about how ecosystems interact (SC09-GR.6-S.2-GLE.1-EO.b) * Model equilibrium in an ecosystem (SC09-GR.6-S.2-GLE.1-EO.c) * Examine, evaluate, question, and ethically use information from a variety of sources to investigate how environmental conditions affect survival (SC09-GR.6-S.2-GLE.1-EO.d) |

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| **Critical Language:** includes the Academic and Technical vocabulary, semantics, and discourse which are particular to and necessary for accessing a given discipline.  EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: *“Mark Twain exposes the hypocrisy of slavery through the use of satire.”* | | |
| **A student in \_\_\_\_\_\_\_\_\_\_\_\_\_\_ can demonstrate the ability to apply and comprehend critical language through the following statement(s):** | | *Ecosystems change over time as populations interact with each other and the changing environment.* |
| **Academic Vocabulary:** | analyze, interpret, evidence, interactions | |
| **Technical Vocabulary:** | weathering, erosion, deposition, constructive forces, destructive forces, ecosystem, population, species, crust, survival, equilibrium, producers, consumers, food web, food chain, | |

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| **Unit Title** | Water, Water Everywhere | **Length of Unit** | | 4-6 weeks | |
| **Focusing Lens(es)** | Cycle | | **Standards and Grade Level Expectations Addressed in this Unit** | | SC09-GR.6-S.1-GLE.3  SC09-GR.6-S.1-GLE.4  SC09-GR.6-S.3-GLE.2 |
| **Inquiry Questions (Engaging- Debatable):** | * How do daily decisions impact the quality of water in the water cycle? * Would a new “visitor” to Earth see five oceans or only one? * Why is water an essential substance for supporting life? * How would life be different if all matter had the same density? | | | | |
| **Unit Strands** | Physical Science, Earth Science | | | | |
| **Concepts** | resources, cycle, balance, system, change, properties, structure/form, phase, water, activity, quality | | | | |

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| **Generalizations**  **My students will Understand that…** | **Guiding Questions**  **Factual Conceptual** | |
| The structure/form and availability of water changes as it cycles in predictable patterns (SC09-GR.6-S.3-GLE.2-EO.a; IQ.1) | What states of matter can water exist as on Earth? (SC09-GR.6-S.3-GLE.2-EO.a)  What processes (condensation, evaporation, freezing and melting) account for changes in states of matter of water? (SC09-GR.6-S.3-GLE.2-EO.b) | How is water cycled on earth? (SC09-GR.6-S.3-GLE.2-EO.a) |
| Some properties of water change based on its phase which leads to greater understanding of its limitations and benefits (SC09-GR.6-S.1-GLE.3-EO.a; RA.1) | How does the density of water change with the phase? (SC09-GR.6-S.1-GLE.3-EO.a; IQ.1)  What objects of specific densities will float or sink in water? (SC09-GR.6-S.1-GLE.4-EO.c) | What would be the implications if solid water was denser than liquid water? (SC09-GR.6-S.1-GLE.4-EO.a; IQ.1) |
| Many properties of water are interrelated; one property change (e.g., temperature) often causes changes in another property (chain reaction or cause and effect) (SC09-GR.6-S.1-GLE.3-EO.b; IQ.2) | What are the properties of water?  How are volume, mass, weight and density measured (tools, units)? (SC09-GR.6-S.1-GLE.4-EO.c) | Describe situations in which mass, weight, volume, or density would be most useful to know about an object. (SC09-GR.6-S.1-GLE.4; IQ.3)  How are the various properties of water inter-related?  Why does weight and not mass change due to gravitational force? (SC09-GR.6-S.1-GLE.4-EO.d) |
| Human activities (including increased atmospheric pollution) can determine the quality and availability of water locally and worldwide (SC09-GR.6-S.3-GLE.2-EO.c, d; IQ.3; RA.1) | What factors determine water quality? (SC09-GR.6-S.3-GLE.2-EO.c; IQ.3; RA.1)  What water sources exist on Earth, and how do they vary in distribution? (SC09-GR.6-S.3-GLE.2-EO.a) | Where does water go after it is used in houses or buildings? (SC09-GR.6-S.3-GLE.2-EO.e) |

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| **Critical Content:**  **My students will Know…** | **Key Skills:**  **My students will be able to (Do)…** |
| * The distribution and recycling of water in various forms and locations (SC09-GR.6-S.3-GLE.2-EO.a) * How to describe water by its properties ( including mass, weight, volume, and density) (SC09 – GR.6-S.1-GLE.4-EO.c) * Different phases of water (solid, liquid, and gas) and each phase’s unique properties. * The reasons why changes in temperature are not always equivalent to changes in state. (SC09-GR.6-S.1-GLE.3–EO.b) * The unique properties of solids, liquids and gasses that make them useful in different situations. (SC09 – GR.6-S.1-GLE.3; RA.1) * How gravitational force can change the weight (and not the mass)of an object. (SC09–GR.6-S.1-GLE.4–EO.d) * The reasons why mass, weight and volume affect density. (SC09–GR.6-S.1-GLE.4–EO.c) * Specific tools used to gather information about mass, weight, volume and density. (SC09–GR.6-S.1-GLE.4–EO.e) * The causes and effects of water pollution in local and world water distributions (SC09–GR.6-S.3-GLE.2–EO.d) * The relationships between water systems and local, regional, and world population development. (SC09–GR.6-S.3-GLE.2; RA.2) | * Ask testable questions and make falsifiable hypotheses about water distribution (SC09-GR.6-S.3-GLE.2; NA 1) * Use evidence to model how water is transferred throughout the earth. (SC09-GR.6-S.3-GLE.2–EO.b) * Create and evaluate models to represent water circulation and distribution. (SC09–GR.6-S.3-GLE.2; NS. 2) * Gather and analyze data from a variety of print resources and investigations to account for local and world-wide water circulation and distribution patterns. (SC09–GR.6-S.3-GLE.2–EO.a) * Calculate the density of a sample, predict its ability to float or sink in a liquid of known density, design and perform the experiment, and justify discrepancies. (SC09–GR.6-S.1-GLE.4; NS.1) * Ask testable questions and make a falsifiable hypothesis about density and design an inquiry based method to find an answer. (SC09–GR.6-S.1-GLE.4;NS.2) * Select proper tools to measure the mass and volume of an object and use appropriate units. (SC09–GR.6-S.1-GLE.4; NS.3) |

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| **A student in \_\_\_\_\_\_\_\_\_\_\_\_\_\_ can demonstrate the ability to apply and comprehend critical language through the following statement(s):** | | *Water on earth exists in many different forms, each with its own properties.*  *Mass, weight, volume, and density are properties of water that can be measured with the right tools.* |
| **Academic Vocabulary:** | predict, measure, calculate, model (noun), model (verb) | |
| **Technical Vocabulary:** | condensation, evaporation, melt, freeze, mass, weight, volume, density, units, grams, kilograms, liters, milliliters, g/cm3, g/ml, tools, gravity, | |

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| **Unit Title** | Building Blocks of Life | **Length of Unit** | | 4-6 weeks | |
| **Focusing Lens(es)** | Complexity  Structure | | **Standards and Grade Level Expectations Addressed in this Unit** | | SC09-GR.6-S.1-GLE.1  SC09-GR.6-S.1-GLE.2  SC09-GR.6-S.1-GLE.4 |
| **Inquiry Questions (Engaging- Debatable):** | * Are space travel and the colonization of places like the moon or mars possible? * Do the Laws of Physics apply constantly across the universe? * How would the human body be affected by space travel? * Is anything in the world not made of matter? | | | | |
| **Unit Strands** | Physical Science | | | | |
| **Concepts** | properties, structure, function, substance, energy, relationship, foundation, order, patterns, bonds, interaction, matter, atoms, molecules, mass volume, density, weight | | | | |

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| **Generalizations**  **My students will Understand that…** | **Guiding Questions**  **Factual Conceptual** | |
| Relationships between atoms and molecules determine the complexity and properties of matter (SC09-GR.6-S.1-GLE.1-EO.a) and (SC09-GR.6-S.1-GLE.2-EO.b) | In what ways does the relationship between atoms and molecules determine the complexity of matter? (SC09-GR.6-S.1-GLE.1,2) | How does the interaction of things we can’t see affect what we can see? |
| Structure of matter creates predictable patterns in the universe. (SC09-GR.6-S.1.GLE.1-EO.b,c) | In what ways does the arrangement of atoms in elements create predictable structures of matter? (SC09-GR.6-S.1.GLE.1-EO.b,c) | How does the understanding of the basic building blocks of matter help us to predict the substance of the universe? (SC09-GR.6-S.1.GLE.1-EO.b; IQ.1; RA.1) |
| Gravitational forces interact and act with matter in the universe in predictable ways. (SC09-GR.6-S.1-GLE.4) | What is the relationship between mass, volume and density, and do these terms relate to weight? (SC09-GR.6-S.1.GLE.2-EO.b) | If weight and mass are not the same thing, why might people use the words interchangeably? (SC09-GR.6-S.1.GLE.4; IQ.2) |
| Mass, weight, and volume determine an object’s or a liquid’s density.(SC09-GR.6-S.1-GLE.4-EO.c) | What are the differences between mass, volume, and weight? | If two objects have the same mass, how would the density differ if one was larger than the other? |
| The arrangement of atoms in matter defines the density of matter. (SC09-GR.6-S.1-GLE. 3-EO.c,d) | What state of matter is the densest? | Why is the solid state of matter usually the most dense?  Why do balloons float? |

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| **Critical Content:**  **My students will Know…** | **Key Skills:**  **My students will be able to (Do)…** |
| * Chemical and nuclear reactions based on atomic and molecular structure (SC09-GR.6-S.1-GLE.1) * The fundamental building blocks of matter(SC09-GR.6-S.1-EO.a) * Particle theory of matter and characteristics of the particle model (SC09-GR.6-S.1-EO.b) * The atomic model as the foundation for all chemistry (SC09-GR.6-S.1-EO.c) * The history of the scientific investigations and the relationship to the understanding of the nature of matter. (SC09-GR.6-S.1-EO.d) * The consistency of living things in relation to the matter in the rest of the universe. (SC09-GR.6-S.1-GLE.1;RA.1) * The similarities and differences between elements and compounds. (SC09-GR.6-S.1-GLE.2-EO.a) * Why atoms form into molecules with different properties than their components. . (SC09-GR.6-S.1-GLE.2-EO.b) * The structure of a molecule. (SC09-GR.6-S.1-GLE.2-EO.c) * How gravitational force can change the weight (and not the mass)of an object. (SC09–GR.6-S.1-GLE.4–EO.d) * The relationship between acceleration due to gravity wand the mass and weight of an object. (SC09-GR.6-S.1-GLE.2-EO.b) * The relationship between mass, volume, and density. (SC09-GR.6-S.1-GLE.2-EO.d & e) * Units of measure for mass, volume, and density. (SC09-GR.6-S.1-GLE.2;N.3) | * Apply an understanding of atomic and molecular structure (SC09-GR.6-S.1-GL.1) * Identify evidence that suggests there is a fundamental building block of matter (SC09-GR.6-S.1-GL.1-EO.a) * Use the particle model of matter to illustrate characteristics of different substances(SC09-GR.6-S.1-GL.1-EO.b) * Develop an evidence based scientific explanation of the atomic model (SC09-GR.6-S.1-GL.1-EO.c) * Find and evaluate appropriate information from reference books, journals, magazines, online references, and databases to compare and contrast historical explanations for the nature of matter(SC09-GR.6-S.1-GL.1-EO.d) * Work in groups using the writing process to effectively communicate an understanding of the particle model of matter. (SC09-GR.6-S.1-GL.1;N.1) * Use technology to share research findings about historical explanations for the nature of matter and to publish information to various audiences. (SC09-GR.6-S.1-GL.1;N.2) * Create models that explain the particle theory of matter. (SC09-GR.6-S.1-GL.1;N.3) * Recognize and describe the ethical traditions of science: (SC09-GR.6-S.1-GL.1;N.4) * Explain the similarities and differences between elements and compounds (SC09-GR.6-S.1-GL.2.EO.a) * Identify evidence that atoms form into molecules with different properties than their components. ((SC09-GR.6-S.1-GL.2.EO.b) * Find and evaluate information from a variety of resources. (SC09-GR.6-S.1-GL.2.EO.c) * Use models and/or electronic media to show and understand how molecules are made of atoms (SC09-GR.6-S.1-GL.2;N.1) * Investigate how our current understanding of matter has developed through centuries of scientific investigations (SC09-GR.6-S.1-GL.2;N.2) * Predict how changes in acceleration due to gravity will affect the mass and weight of an object (SC09-GR.6-S.1-GL.4.EO.b) * Predict how mass, weight, and volume affect density (SC09-GR.6-S.1-GL.4.EO.c) * Measure mass and volume, and use these quantities to calculate density (SC09-GR.6-S.1-GL.4.EO.d) * Use tools to gather, view, analyze, and report results for scientific investigations about the relationships among mass, weight, volume, and density (SC09-GR.6-S.1-GL.4.EO.e) |

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| **Critical Language:** includes the Academic and Technical vocabulary, semantics, and discourse which are particular to and necessary for accessing a given discipline.  EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: *“Mark Twain exposes the hypocrisy of slavery through the use of satire.”* | | |
| **A student in \_\_\_\_\_\_\_\_\_\_\_\_\_\_ can demonstrate the ability to apply and comprehend critical language through the following statement(s):** | | *Substances behave differently based upon their atomic and molecular structure.*  *Compounds are a combination of elements and have different properties then their individual elements.*  *Mass is the amount of matter in an object and is independent of gravitational force.*  *Weight is a measure of gravitational force on an object.* |
| **Academic Vocabulary:** | compare and contrast, interactions, processes, illustrate, explain, examine, interact, analyze, predict, communicate, evaluate, gather, develop, design, justify, apply, interpret, relationship, identify, model, determine, similarities, differences, evidence, investigate, calculate, measure, function | |
| **Technical Vocabulary:** | matter, atoms, elements, compounds, properties, particles, building blocks of matter, particle model, particle theory of matter, molecules, arrays, substances, components, mass, weight, volume, density, gravitational force, acceleration, atomic structure, molecular structure, chemical reactions, nuclear reactions | |

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| **Unit Title** | **Environmental Systems** | **Length of Unit** | | 4-6 weeks | |
| **Focusing Lens(es)** | Interconnections | | **Standards and Grade Level Expectations Addressed in this Unit** | | SC09-GR.6-S.2-GLE.1  SC09-GR.6-S.2-GLE.2  SC09-GR.6-S.3-GLE.1  SC09-GR.6-S.3-GLE.2 |
| **Inquiry Questions (Engaging- Debatable):** | * Do human behaviors influence the destructive and constructive forces that already naturally shape our Earth? * What, if any, are the connections between human behavior and natural disasters? (i.e. Hurricane Sandy)? * How do natural disasters affect human behavior? | | | | |
| **Unit Strands** | Earth Science, Life Science | | | | |
| **Concepts** | cycle, systems, energy, rules, interactions, change, environment, survival, model, natural event, process, dynamics, universal,  foundation, forces, conservations, earth and human activity, interrelationships, biotic, abiotic | | | | |

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| **Generalizations**  **My students will Understand that…** | **Guiding Questions**  **Factual Conceptual** | |
| Survival of organisms depends on the interaction of complex systems. (SC09-GR.6-S.3.GLE.2) and (SC09-GR.6-S.2.GLE.1) | How does the lack or abundance of water impact human civilizations and populations? (SC09-GR.6-S.3.GLE.2; IQ.2) | Why do all organisms value survival?  How do your daily decisions impact the quality of water in the water cycle? (SC09-GR.6-S.3.GLE.2; IQ.3) |
| Earth and human activity impact the overall balance of Earth’s systems. (SC09-GR.6-S.2.GLE.2) | What understandings of the cycling of matter and energy have helped mitigate environmental problems? (SC09-GR.6-S.2.GLE.2-EO.b) | Why would humans want to have balanced systems?  Why do the choices that humans make impact overall balance of Earth’s systems? |
| Different systems undergo cyclical changes that follow specific rules. (SC09-GR.6-S.2.GLE.2) | How does climate change affect ecosystems?  What “job” do organisms do to facilitate the flow of energy and cycling of matter? (SC09-GR.6-S.2.GLE.2-EO.b; IQ.1) | Why does one change in a system affect another system? |
| Changes in the environment have a dynamic effect on cycles. (SC09-GR.6-S.2-GLE.1) | What is climate change? (SC09-GR.6-S.2-GLE.1-EO.a) | How do changes in the environment impact cycles? (SC09-GR.6-S.2-GLE.1-EO.a) |
| The flow of energy relates to the cycling of matter in an ecosystem which contributes to conservation of mass and energy (SC09-GR6-S.2-GLE.2-EO.c) | How does energy flow through a food web? (SC09-GR6-S.2-GLE.2-EO.c) | Why is it important to protect endangered species? |

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| **Critical Content:**  **My students will Know…** | **Key Skills:**  **My students will be able to (Do)…** |
| * The differences and interactions between the abiotic and biotic environment (SC09-GR6-S.2-GLE.1) * That changes in environmental conditions – such as climate change – and populations (SC09-GR6-S.2-GLE.1.EO.a) * The impact of ecosystems’ interactions with the global environment (SC09-GR6-S.2-GLE.1.EO.b) * What equilibrium in an ecosystem looks like, including basic inputs and outputs (SC09-GR6-S.2-GLE.1-EO.c) * The effects of changes in an ecosystem (e.g., climate change can impacts organisms, populations, and species through the removal of a predator) (SC09-GR6-S.2-GLE.1-EO.c) * Environmental conditions that affect the survival of individual organisms (SC09-GR6-S.2-GLE.1-EO.d) * There are generally more producers than consumers in an ecosystem (SC09-GR6-S.2-GLE.2-EO.a) * The flow of energy through an ecosystem using a food web (SC09-GR6-S.2-GLE.2-EO.b) * Examples of how the interaction between constructive and destructive forces shape the Earth’s structure (SC09-GR6-S.3-GLE.1-EO.a) * Tools and sources which can be used to find information about the Earth’s surface features (SC09-GR6-S.3-GLE.1-EO.b) * Models that illustrate how water is transferred throughout the earth (SC09-GR6-S.3-GLE.2-EO.b * Some solutions and proposed solutions related to problems of water quality, circulation, and distribution – both locally and worldwide (SC09-GR6-S.3-GLE.2-EO.c) * The causes and effects of water pollution in local and world water distributions (SC09-GR6-S.3-GLE.2-EO.d) * Where water goes after it is used in houses or buildings (SC09-GR6-S.3-GLE.2-EO.e) | * Explain and illustrate with examples how living systems interact with the biotic and abiotic environment (SC09-GR6-S.2-GLE.1) * Interpret and analyze data about changes in environmental conditions (SC09-GR6-S.2-GLE.1.EO.a) * Develop, communicate, and justify an evidence based explanation about how ecosystems interact with and impact the global environment (SC09-GR6-S.2-GLE.1.EO.b) * Model equilibrium in an ecosystem(SC09-GR6-S.2-GLE.1-EO.c) * Predict how a change in ecosystems impacts an organism, population and species(SC09-GR6-S.2-GLE.1-EO.c) * Examine, evaluate, question, and ethically use information from a variety of sources. (SC09-GR6-S.2-GLE.1-EO.d) * Develop, communicate, and justify why there are more producers and consumers in an ecosystem (SC09-GR6-S.2-GLE.2-EO.a) * Design a food web to show the flow of energy in an ecosystem (SC09-GR6-S.2-GLE.2-EO.b) * Compare and contrast the flow of energy with the cycling of matter in an ecosystem (SC09-GR6-S.2-GLE.2-EO.c) * Gather, analyze, and communicate an explanation for the interactions between Earth’s constructive and destructive forces(SC09-GR6-S.3-GLE.1-EO.a) * Gather, analyze and communicate evidence that explains the formation of Earth’s surface features (SC09-GR6-S.3-GLE.1-EO.b) * Use a computer simulation for Earth’s changing crust (SC09-GR6-S.3-GLE.1-EO.c) * Gather, analyze data to investigate the account for local and world-wide water circulation and distribution patterns (SC09-GR6-S.3-GLE.1-EO.a) * Use evidence to model how water is transferred throughout the earth (SC09-GR6-S.3-GLE.2-EO.b) * Identify problems, and propose solutions related to water quality, circulation, and distribution-both locally and worldwide (SC09-GR6-S.3-GLE.2-EO.c) * Identify the various causes and effects of water pollution local and world water distributions (SC09-GR6-S.3-GLE.2-EO.d) * Describe where water goes after it is used in houses or buildings (SC09-GR6-S.3-GLE.2-EO.e) * Use simulations to understand the Earth’s changing crust (SC09-GR6-S.3-GLE.1-EO.c) * Use resources and investigations to account for local and world-wide water circulation and distribution patterns (SC09-GR6-S.3-GLE.1-EO.a) |

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| **Critical Language:** includes the Academic and Technical vocabulary, semantics, and discourse which are particular to and necessary for accessing a given discipline.  EXAMPLE: A student in Language Arts can demonstrate the ability to apply and comprehend critical language through the following statement: *“Mark Twain exposes the hypocrisy of slavery through the use of satire.”* | | |
| **A student in \_\_\_\_\_\_\_\_\_\_\_\_\_\_ can demonstrate the ability to apply and comprehend critical language through the following statement(s):** | | *Climate change is the result of human interactions and environmental changes.*  *Human behaviors affect the flow of energy in an environmental system.* |
| **Academic Vocabulary:** | compare and contrast, interactions, processes, illustrate, explain, examine, interact, analyze, predict, communicate, evaluate, gather, develop, design, justify, apply, interpret, relationship | |
| **Technical Vocabulary:** | forces, energy, matter, survival, biodiversity, biosphere, ecosystems, organisms, abiotic, biotic, environmental changes, cycling of matter, crust, geologic events, natural events, water distributed, water circulated, local water circulation, world-wide water circulation, local water distribution patterns, water quality, water circulation, water distribution, water pollution, water cycle, water conservation, water systems, water-use, irrigation patterns | |