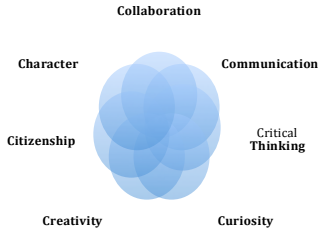
Content Area: Science	Course: Earth and Space Sciences	Grade Level: 6-8
	R14 The Seven Cs of Learning 	

Unit Titles	Length of Unit
• Space Systems	• 5-6 weeks
• History of Earth	• 5-6 weeks
• Earth's Systems	• 5-6 weeks
• Weather and Climate	• 5-6 weeks
• Human Impacts	• 5-6 weeks

Strands	Course Level Expectations
Earth & Space Systems	• Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons • Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. • Analyze and interpret data to determine scale properties of objects in the solar system. • Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. • Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity • Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes
Earth's History & Human Impact	• Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history • Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. • Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions. • Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.

	• Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. • Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth' systems
Weather & Climate	• Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions • Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. • Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.

Unit Title	Space Systems	**Length of Unit**	5-6 weeks

Inquiry Questions **(Engaging & Debatable)**	• What is Earth's place in the Universe? • What causes the patterns we see on Earth – lunar, seasons, and eclipses?
Standards*	MS-ESS1-1, MS-ESS1-2, MS-ESS1-3
Unit Strands & Concepts	**DISCIPLINARY CORE IDEAS (DCI):** • The Universe and its Stars • Earth and the Solar System **Cross Cutting Concepts (CCC)** • Patterns • Scale, Proportion, and Quantity • Systems and System Models
Key Vocabulary	Lunar Phases, Solar Eclipse, Lunar Eclipse, Gravity, Galaxy, Solar System, Orbit, Axis, Data, Observations

*Standards based on the Next Generation Science Standards (NGSS) and the National Research Council (NRC)
For more information visit: http://portal.ct.gov/SDE/Science/Science-Standards-and-Resources

Unit Title	Space Systems	**Length of Unit**	5-6 Weeks

Critical Content: **My students will Know…**	**Key Skills:** **My students will be able to (Do)…**
• Patterns of the apparent motion of the sun, the moon, and stars in the sky can be observed, described, predicted, and explained with models. • Earth and its solar system are part of the Milky Way galaxy, which is one of many galaxies in the universe • The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. • This model of the solar system can explain eclipses of the sun and the moon. • Earth's spin axis is fixed in direction over the short-term but tilted relative to its orbit around the sun. The seasons are a result of that tilt and are caused by the differential intensity of sunlight on different areas of Earth across the year. • The solar system appears to have formed from a disk of dust and gas, drawn together by gravity.	• Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons • Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. • Analyze and interpret data to determine scale properties of objects in the solar system.

Assessments:	Performance Task(s) focused on demonstrating an understanding of Earth's place in relation to the solar system, Milky Way galaxy, and universe as well as the cyclical patterns evident in eclipses, tides, and seasons.
Teacher Resources:	NGSS Frameworks, Region 14 Science Implementation Guide, Model Based Inquiry Investigations, Foss Kits, NGSS Phenomenon Resources, Stem Teaching Tools

Unit Title	History of Earth	**Length of Unit**	5-6 weeks

Inquiry Questions **(Engaging & Debatable)**	• How do people figure out that the Earth and life on Earth have changed over time?
Standards	MS-ESS1-4, MS-ESS2-2, MS-ESS2-3
Unit Strands & Concepts	**DISCIPLINARY CORE IDEAS (DCI):** • The History of Planet Earth • Earth's Materials and Systems • Plate Tectonics and Large-Scale System Interactions • The Roles of Water in Earth's Surface Processes **Cross Cutting Concepts (CCC)** • Patterns • Scale, Proportion, and Quantity
	Rock strata, Geologic Time, Fossils, Plate Tectonics, Relative Dating, Sea Floor Ridge, Sea Floor Trench, Weathering, Erosion, Data, Observations

Unit Title	History o Earth	**Length of Unit**	5-6 weeks

Critical Content: **My students will Know…**	**Key Skills:** **My students will be able to (Do)…**
• The geologic time scale interpreted from rock strata provides a way to organize Earth's history. • Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale • Tectonic processes continually generate new ocean sea floor at ridges and destroy old sea floor at trenches. • The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future • Maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart. • Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations.	• Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history. • Synthesize evidence in order to justify evidence how geoscience processes have changed Earth's surface at varying time and spatial scales. • Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions

Assessments:	Performance Task(s) focused on demonstrating an understanding of the different ways geologic processes operate over the long expanse of geologic time. How geoscience processes and events have shaped Earth's history.
Teacher Resources:	NGSS Frameworks, Region 14 Science Implementation Guide, Model Based Inquiry Investigations, Foss Kits, NGSS Phenomenon Resources, Stem Teaching Tools

Unit Title	Earth's Systems	**Length of Unit**	5-6 weeks

Inquiry Questions (Engaging & Debatable)	• What role does water play in shaping the earth? • Why are Earth's resources distributed differently around the world?
Standards*	MS-ESS2-1, MS-ESS2-4, MS-ESS3-1
Unit Strands & Concepts	**DISCIPLINARY CORE IDEAS (DCI):** • Earth Materials and Systems • The Roles of Water in Earth's Surface Processes • Natural Resources **Cross Cutting Concepts (CCC)** • Cause and Effect • Energy and Matter • Stability and Change
Key Vocabulary	Crystallization, Weathering, Deformation, Sedimentation, Renewable Resource, Non-Renewable Resource, Transpiration, Evaporation, Condensation, Precipitation, Atmosphere, Biosphere, Geologic process, Data, Observations

Unit Title	Earth's Systems	Length of Unit	5-6 weeks

Critical Content: **My students will Know…**	**Key Skills:** **My students will be able to (Do)…**
• All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. • The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms • Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation, as well as downhill flows on land. • Global movements of water and its changes in form are propelled by sunlight and gravity. • Humans depend on Earth's land, ocean, atmosphere, and biosphere for many different resources. • Minerals, fresh water, and biosphere resources are limited, and many are not renewable or replaceable over human lifetimes. • These resources are distributed unevenly around the planet as a result of past geologic processes.	• Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. • Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity. • Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes

Assessments:	Performance Task(s) focused on demonstrating an understanding of how Earth's geosystems operate by modeling the flow of energy and cycling of matter within and among different systems. As well as the ways that geoscienc processes provide resources needed by society bu also cause natural hazards tha present risks to society.
Teacher Resources:	NGSS Frameworks, Region 14 Science Implementation Guide, Model Based Inquiry Investigations, Foss Kits, NGSS Phenomenon Resources, Stem Teaching Tools

Unit Title	Weather and Climate	**Length of Unit**	5-6 weeks

Inquiry Questions **(Engaging & Debatable)**	• What factors influence weather and climate? • How do the properties and movements of water shape Earth's surface and affect its systems?
Standards*	MS-ESS2-5, MS-ESS2-6, MS-ESS3-5
Unit Strands & Concepts	**DISCIPLINARY CORE IDEAS (DCI):** • The Roles of Water in Earth's Surface Processes • Weather and Climate • Global Climate Change **Cross Cutting Concepts (CCC)** • Cause and Effect • Systems and System Models • Stability and Change
Key Vocabulary	Air Mass, Temperature, Air Pressure, Humidity, Climate, Coriolis Effect, Latitude, Longitude, Altitude, Prevailing Winds, Salinity, Data, Observations

Unit Title	Weather and climate	**Length of Unit**	5-6 weeks

Critical Content: **My students will Know…**	**Key Skills:** **My students will be able to (Do)…**
• The complex patterns of the changes and the movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns. • Variations in density due to variations in temperature and salinity drive a global pattern of interconnected ocean currents. • Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns. Because these patterns are so complex, weather can only be predicted probabilistically. • The ocean exerts a major influence on weather and climate by absorbing energy from the sun, releasing it over time, and globally redistributing it through ocean currents. • Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). • Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge.	• Collect and analyze data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions. • Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates. • Clarify existing evidence of the factors that have caused the rise in global temperatures over the past century.

Assessments:	Performance Task(s) focused on demonstrating an understanding of the factors that control weather and climate.
Teacher Resources:	NGSS Frameworks, Region 14 Science Implementation Guide, Model Based Inquiry Investigations, Foss Kits, NGSS Phenomenon Resources, Stem Teaching Tools

Unit Title	Human Impacts	**Length of Unit**	5-6 weeks

Inquiry Questions **(Engaging & Debatable)**	• How can natural hazards be predicted? • How can we minimize the negative impacts to the Earth as we use the resources that we need?
Standards*	MS-ESS3-2, MS-ESS3-3, MS-ESS3-4, MS-ETS1-1-4
Unit Strands & Concepts	**DISCIPLINARY CORE IDEAS (DCI):** • Natural Hazards • Human Impacts on Earth Systems **Cross Cutting Concepts (CCC)** • Cause and Effect • Patterns
Key Vocabulary	Natural, Hazards, Catastrophic Events, Natural Resources, Biosphere, Data, Observations

Unit Title	Human Impacts	Length of Unit	5-6 weeks

Critical Content: **My students will Know…**	**Key Skills:** **My students will be able to (Do)…**
• Mapping the history of natural hazards in a region, combined with an understanding of related geologic forces can help forecast the locations and likelihoods of future events. • Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things. • Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise	• Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. • Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment • Construct an argument supported by evidence for how increases in human population and per-capita consumption of natural resources impact Earth's systems.

Assessments:	Performance Task(s) focused on demonstrating an understanding of how human activities affect Earth's systems.
Teacher Resources:	NGSS Frameworks, Region 14 Science Implementation Guide, Model Based Inquiry Investigations, Foss Kits, NGSS Phenomenon Resources, Stem Teaching Tools