

# Wyoming Department of Education Required Virtual Education Course Syllabus

## Natrona County School District # 1

Program Name	Natrona Virtual Learning	Content Area	SC
Course ID	NVA0706022	Grade Level	6
Course Name	SCI6BEart Science	of Credits	
SCED Code	70601	Curriculum Type	K1 Inc

### COURSE DESCRIPTION

The Earth Science curriculum builds on the natural curiosity of students. By connecting them to the beauty of geological history, the amazing landforms around the globe, the nature of the sea and air, and the newest discoveries about our universe, it gives students an opportunity to relate to their everyday world. Students will explore topics such as:

- Fundamentals of geology, oceanography, meteorology, and astronomy.
  - Earth's minerals and rocks.
  - Earth's interior.
- Plate tectonics, earthquakes, volcanoes, and the movements of continents.
  - Geology and the fossil record.
  - Oceans and the atmosphere.
- The solar system and the universe.

### WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	<a href="#">BENCHMARK (Standard/Indicator) Use the Standards and Benchmarks as Spreadsheets</a>
SC8.1.1.	Levels of Organization in Living Systems: Students model the cell as the basic unit of a living system. They realize that all functions that sustain life act within a single cell and cells differentiate into specialized cells, tissues, organs, and organ systems.
SC8.1.2.	Reproduction and Heredity: Students describe reproduction as a characteristic of all living systems, which is essential to the continuation of species, and identify and interpret traits, patterns of inheritance, and the interaction between genetics and environment.
SC8.1.3.	Evolution as Theory: Students explain evolution as theory and apply the theory to the diversity of species, which results from natural selection and the acquisition of unique characteristics through biological adaptation.

SC8.1.4.	Diversity of Organisms: Students investigate the interconnectedness of organisms, identifying similarity and diversity of organisms through a classification system of hierarchical relationships and structural homologies.
SC8.1.5.	Behavior and Adaptation: Students recognize behavior as a response of an organism to an internal or environmental stimulus and connect the characteristics and behaviors of an organism to biological adaptation.
SC8.1.6.	Interrelationships of Populations and Ecosystems: Students illustrate populations of organisms and their interconnection within an ecosystem, identifying relationships among producers, consumers, and decomposers.
SC8.1.7.	The Earth in the Solar System: Students describe Earth as the third planet in the Solar System and understand the effects of the sun as major source of energy, gravitational forces, and motions of objects in the Solar System.
SC8.1.8.	The Structure of the Earth System: Students examine the structure of the Earth, identifying layers of the Earth, considering plate movement and its effect, and recognizing landforms resulting from constructive and destructive forces.
SC8.1.9.	The Earth's History: Students systematize the Earth's history in terms of geologic evidence, comparing past and present Earth processes and identifying catastrophic events and fossil evidence.
SC8.1.10.	The Structure and Properties of Matter: Students identify characteristic properties of matter such as density, solubility, and boiling point and understand that elements are the basic components of matter.
SC8.1.11.	Physical and Chemical Changes in Matter: Students evaluate chemical and physical changes, recognizing that chemical change forms compounds with different properties and that physical change alters the appearance but not the composition of substance.
SC8.1.12.	Forms and Uses of Energy: Students investigate energy as a property of substances in variety of forms with range of uses.
SC8.1.13.	The Conservation of Matter and Energy: Students identify supporting evidence to explain conservation of matter and energy, indicating that matter or energy cannot be created or destroyed but is transferred from one object to another.
SC8.1.14.	Effects of Motions and Forces: Students describe motion of an object by position, direction, and speed, and identify the effects of force and inertia on an object.
SC8.2.1.	Students research scientific information and present findings through appropriate means.
SC8.2.2.	Students use inquiry to conduct scientific investigations: Ask questions that lead to conducting an investigation. Collect, organize, and analyze and appropriately represent data.

	<p>Draw conclusions based on evidence and make connections to applied scientific concepts.</p> <p>Clearly and accurately communicate the result of the investigations.</p>
SC8.2.3.	Students clearly and accurately communicate the result of their own work, as well as information obtained from other sources.
SC8.2.4.	Students recognize the relationship between science and technology in meeting human needs.
SC8.2.5.	Students properly use appropriate scientific and safety equipment, recognize hazards and safety symbols, and observe standard safety procedures.
SC8.3.1.	<p>Students explore the nature and history of science:</p> <p>Students explore how scientific knowledge changes and grows over time, and impacts personal and social decisions.</p> <p>Students explore the historical use of scientific information to make personal and social decisions.</p>
SC8.3.2.	<p>Students explore how scientific information is used to make decisions:</p> <p>The role of science in solving personal, local, and national problems</p> <p>Interdisciplinary connections of the sciences and connections to other subject areas and careers in science or technical fields</p> <p>Origins and conservation of natural resources, including Wyoming examples</p>

UNIT OUTLINE	STANDARD#	OUTCOMES OBJECTIVES/STUDENT CENTERED GOALS
Earth's Surface 1 Introduction to Earth Science		Explore concepts to be addressed during the year in Earth Science.
Earth's Surface 2 Spheres of the Earth		Explain that the earth is made up of layers (internally and on the surface). Describe features of the layers, or spheres, that make up the earth system (atmosphere, biosphere, lithosphere, hydrosphere, and magnetosphere). Define the biosphere as the zone of life on Earth that includes all living things.
Earth's Surface 3 Mapping the Earth		Determine the scale of a map. Interpret maps using scale, directional indicators, keys, and symbols to locate physical features. Use latitude and longitude to locate places on a map.
Earth's Surface 4 Mapping Earth's		Identify a topographic map as a representation of the earth's surface. Analyze topographic maps. Define topography as the

Physical Features		physical features of an area of land, including mountains, valleys, plains, and bodies of water.
Earth's Surface 5 Weathering		Explain that weathering produces sediments that contribute to soil formation (sand, silt, clay). Define weathering. Give examples of how climate differences influence the rate of weathering.
Earth's Surface 6 Erosion		Describe major causes, processes, and consequences of erosion. Define erosion. Identify surface structures that show the effects of erosion.
Earth's Surface 7 Soils of the Earth		Describe major causes, processes, and consequences of erosion. Define erosion. Identify surface structures that show the effects of erosion.
Earth's Surface 8 Soil Profiles		Describe a soil profile, including soil horizons. Explain how plants use various components of soils (organic and inorganic). Investigate and identify the composition of different soils.
Earth's Surface 9 Lab: Desertification		Conduct an experiment to determine the most effective method for reducing the advancement of sand dunes and deposition of sand in populated areas. Record scientific data using charts, graphs, and/or written descriptions. Explain how sand dunes are formed and recognize that they have two sides: leeward and windward. Record scientific data using charts, graphs, and/or written descriptions.
Earth's Surface 11 Earth's Surface Unit Review		Describe specific uses of topographic maps. Describe the major processes that break apart and move material around on the earth's surface to form soil from rock and organic material and to change the shape of the surface. Describe features on maps such as coordinate systems, scales, directional indicators, keys, symbols, and contour lines. Describe the basic components of the Earth's physical systems: the atmosphere, biosphere, lithosphere, hydrosphere, and magnetosphere. Describe major types of soil in terms of porosity, permeability, and climates in which they are found. Describe major agents of mechanical weathering and of chemical weathering, how the agents cause each kind of weathering, and how mechanical weathering and chemical weathering interact to enhance each other's effects. Explain latitude and longitude and recognize them as providing a primary coordinate system for reference to places on the earth.
Earth's Surface 12 Earth's Surface Unit Assessment		Collect and use data to analyze the weather. Conduct investigations using weather measurement devices.

Rocks and Minerals Identifying Minerals and Crystals		Give examples of observable properties used to identify minerals. Distinguish rocks from minerals. Describe how geologists classify rocks and minerals.
Rocks and Minerals Lab: Mineral Identification		Record scientific data using charts, graphs, and/or written descriptions. Identify minerals based on color, streak, hardness, and unique properties. Record scientific data using charts, graphs, and/or written descriptions.
Rocks and Minerals Igneous Rocks		Explain how igneous rocks are formed. Compare and contrast magma and lava.
Rocks and Minerals Sedimentary Rocks		Describe features in sedimentary rocks that help geologists determine the environments in which the rocks formed. Describe the processes by which sediment becomes sedimentary rock. Explain how sediment is formed.
Rocks and Minerals Metamorphic Rocks		Give examples of metamorphic rocks and describe how they formed. Explain how metamorphic rocks are formed.
Rocks and Minerals The Rock Cycle		Relate the rock cycle to the formation of layers of rock. Describe the arrangement of rocks in rock layers. Summarize how the earth's surface materials are constantly formed, reformed, and transformed from one type of rock into another through the processes of the rock cycle.
Rocks and Minerals Lab: Rock Cycle	SC8.2.5	Give examples of observable properties used to identify minerals. Identify sources of information used in scientific research. Distinguish rocks from minerals.
Rocks and Minerals Unit Review		Explain how properties of minerals can be used in their identification. Explain how metamorphic rocks are formed. State the defining characteristics of a mineral. Explain how igneous rocks form and recognize how physical properties of an igneous rock reveal its origin. Summarize the processes called the rock cycle. Define rocks as composed of minerals and recognize that they are classified as igneous, sedimentary, or metamorphic based on how they were formed. Explain how sedimentary rocks are formed and identify features that help determine the type of environment in which they formed. Recognize that physical and chemical properties of minerals are a result of the types and arrangements of their atoms.
Rocks and Minerals 1 Unit Assessment		
Geologic History 2 Linking Past and	SC8.1.9,	Explain that the processes that have shaped the earth through geologic time are the same today as they were in the past.

Present	SC8.3.1	Summarize major findings of James Hutton and Charles Lyell. Summarize the processes called the rock cycle. Define rocks as composed of minerals and recognize that they are classified as igneous, sedimentary, or metamorphic based on how they were formed. Explain how sedimentary rocks are formed and identify features that help determine the type of environment in which they formed. Recognize that physical and chemical properties of minerals are a result of the types and arrangements of their atoms.
Geologic History 3 Earth's Age	SC8.1.9	Summarize geologic evidence for estimating the age of the earth. Distinguish between absolute and relative dating techniques. Explain how geologists use radiometric dating to date rocks and fossils.
Geologic History 4 Fossils	SC8.1.3, SC8.1.9	Explain that fossils provide evidence of changes on earth over time. Describe fossils as recognized remains or traces of preexisting life, which may exist in the form of shells, bones, or impressions of plant leaves and soft body parts.
Geologic History 5 Records in Rocks	SC8.1.9, SC8.3.1	Explain how scientists use rock layers to gain information about earth's geologic past.
Geologic History 6 Lab: Index Fossils and Paleoenvironments	SC8.1.3, SC8.1.9, SC8.3.1	Investigate how fossil patterns in rock layers provide information about earth's geologic past.
Geologic History A Journey Through Geologic Time	SC8.1.3, SC8.1.9	Interpret a diagram of geologic time scale, including eons, eras, periods, and the approximate time frame for these events.
Geologic History 8 Geologic History Unit Review		Recognize and explain methods by which scientists determine the sequence of geological events, and the life forms and environmental conditions that existed in past geologic eras. Recognize the major historic contributions to interpreting sedimentary rock layers made by James Hutton and Charles Lyell. Recognize how fossils can be interpreted as evidence of preexisting life. Recognize the principle of uniformitarianism and its importance in determining historical events based on geological information. Describe the geologic time scale and provide examples of major geological and biological events of each era.
Geologic History 9 Geologic History Unit Assessment		

Plate Tectonics 2 The Center of the Earth	SC8.1.8	Compare temperature, pressure, and composition of earth's inner and outer cores. Interpret a diagram that depicts the structure of the earth's interior.
Plate Tectonics 3 Continental Drift		Summarize continental drift as an example of scientific theory that changed in response to new evidence. Define and explain Pangaea.
Plate Tectonics 4 Seafloor Geography		Explain how ocean floor mapping led to information that advanced the theory of continental drift. Identify features of the ocean floor.
Plate Tectonics 5 Seafloor Spreading	SC8.1.8	Describe how seafloor spreading results in the formation of new crust. Explain how magnetism in rocks was used as evidence to support the concept of seafloor spreading.
Plate Tectonics 6 Plate Tectonics	SC8.1.8	Summarize the theory of plate tectonics. Summarize major scientific evidence for continental drift.
Plate Tectonics 7 Energy of Convection		Recognize that heat from the earth's interior reaches the surface through convection. Summarize the role of convection and gravity in the movement of plates.
Plate Tectonics 8 Plate Boundaries		Compare the properties of continental and oceanic crust. Describe the types of motion that occur at the boundaries of earth's plates. Interpret map of plate boundaries on the earth.
Plate Tectonics 9 Landforms	SC8.1.8	Explain the relationship between geologic activity and plate motion. Identify the landforms that result from different types of motion at plate boundaries.
Plate Tectonics 10 LAB: Plate Boundaries and Structural Geography	SC8.1.8	Compare convergent, divergent, and transform plate boundaries. Identify the landforms that result from different types of motion at plate boundaries.
Plate Tectonics 12 Earthquakes		Explain causes of earthquakes. Explain the relationship between the speed of released energy waves in an earthquake and the material through which the waves move. Explain how scientists use seismic data to identify earthquake zones around the world. Explain how seismic data collected from earthquakes provide information about the earth's interior.
Plate Tectonics 13 LAB: Using Seismographs		Construct a seismograph and explain how this device can detect earthquakes and other movements in the lithosphere. Analyze the importance of construction material and building shape in determining a building's performance and stability during an

		earthquake.
Plate Tectonics 14 Unit Review		Relate motion at the boundaries of earth's plates to the formation of landforms and geologic events. Explain the historical development of the theory of continental drift. Recognize that movements in the earth's crust create seismic waves that scientists study to learn about earth's interior. Describe observations that the theory of plate tectonics explained what the theory of continental drift did not explain as well. Describe key features of the theory of plate tectonics. Describe the names, locations, and main characteristics of the layers that make up earth's interior. Describe evidence that supported the theory of continental drift.
Plate Tectonics 15 Unit Assessment		
Air, Weather, and Climate 2 Layers of the Atmosphere		Identify the layers of the atmosphere. Describe the interaction of altitude, air density, air pressure, and temperature in the atmosphere. Describe the major components that make up earth's atmosphere.
Air, Weather, and Climate 3 Conduction, Convection, and Radiation		Recognize that earth's heat energy (thermal energy) is distributed by convection, conduction, and radiation. Explain how heat energy is transferred from warmer to cooler places (in the air, water, and on land).
Air, Weather, and Climate 4 Daily Weather		Define weather as the physical conditions of the atmosphere at a given location and time, as described by temperature, wind, air pressure, and humidity.
Air, Weather, and Climate 5 Air Circulation		Recognize that air moves from areas of higher pressure to areas of lower pressure. Define wind as the horizontal movement of air. Describe the effect of earth's rotation on air circulation patterns.
Air, Weather, and Climate 6 Air Masses		Define an air mass as a large body of air characterized by nearly uniform temperature, humidity, and ground-level pressure. Locate and describe air masses on a weather map. Describe the effect of earth's rotation on air circulation patterns.
Air, Weather, and Climate 7 Weather Fronts		Describe how air masses interact at cold, warm, stationary, and occluded fronts. Describe typical weather details associated with cold, warm, stationary, and occluded front
Air, Weather, and Climate 8 Meteorology		Given weather data for a particular location, develop a weather forecast for that area. Interpret weather symbols and isobars on a weather map to describe the weather in a given location.

Air, Weather, and Climate 9 LAB: Working with Weather	SC8.2.5	Collect and use data to analyze the weather. Conduct investigations using weather measurement devices.
Air, Weather, and Climate 11 Weather and Climate		Contrast weather and climate. Explain the influence of latitude on climate conditions and patterns. Define climate as the long-term average of atmospheric conditions for a given region as described by weather observations. Describe and locate on a world map the main climate types (polar, temperate, and tropical).
Air, Weather, and Climate 12 Factors Affecting Climate		Explain how mountain ranges and other major geographical features influence climate patterns. Recognize the major influences of solar energy on wind, ocean currents, and the water cycle. Analyze how the following factors affect climate: land elevation, geographic location, ocean currents, and proximity to bodies of water.
Air, Weather, and Climate 13 Lab: Global Warming		Define global warming as an increase in the average atmospheric temperature. Describe two possible results of global warming. Explain how the greenhouse effect and the amount of carbon dioxide in the atmosphere are thought to be connected to global warming.
Air, Weather, and Climate 14 Unit Review		Name and describe the properties of the four main types of air masses that influence weather in North America, locate them on a map, and describe their typical influence on weather. Compare the properties of low- and high-pressure areas in terms of air density, pressure, humidity, air motion, and types of associated weather. Explain how uneven heating of the earth and the Coriolis effect result in the earth's prevailing winds. Explain how large lakes, mountains, and surface ocean currents such as the Gulf Stream can influence climate. Explain the main energy transfers in the earth system, explain the greenhouse effect, and recognize that relative constancy of the earth's climates requires that the amount of energy received from the sun roughly equals the amount reflected and radiated from earth into space. Name and locate on a world map the three main climate zones (polar, temperate, and tropical) and explain variation in climate in terms of intensity of solar energy, wind, landforms, and ocean currents. Describe how air masses interact at cold, warm, stationary, and occluded fronts and describe the clouds and weather they may produce. Describe the three mechanisms of heat energy transfer to and among the land, ocean, and air.

<p>Air, Weather, and Climate 15 Unit Assessment</p>		
<p>Semester 1 Assessment 1 Semester Review</p>		<p>Explain how properties of minerals can be used in their identification. Recognize and explain methods by which scientists determine the sequence of geological events, life forms present, and environmental conditions in the past geological eras. Explain latitude and longitude and recognize them as providing a primary coordinate system for reference to places on the earth. Explain how uneven heating of the earth and the Coriolis effect create the earth's prevailing winds. Explain the main energy transfers of the earth's energy budget, explain the greenhouse effect, and recognize that relative constancy of the earth's climates requires that the amount of energy received from the sun equals the amount reflected and radiated from earth into space. Explain how igneous rocks form and recognize how physical properties of an igneous rock reveal its origin. Describe the basic components of the earth's physical systems: atmosphere, biosphere, lithosphere, hydrosphere, and magnetosphere. Describe major types of soil in terms of porosity, permeability, and climates in which they are found. State the defining characteristics of a mineral. Describe features on maps such as coordinate systems, scales, directional indicators, keys, symbols, and contour lines. Recognize the principle of uniformitarianism and its importance in determining historical events based on geological information. Describe the geologic time scale and provide examples of major geological and biological events of each era. Recognize that movements in the earth's crust create seismic waves, which scientists study to learn about earth's interior. Describe key features of the theory of plate tectonics. Explain how metamorphic rocks are formed. Compare the properties of low- and high-pressure areas in terms of air density, pressure, humidity, air motion, and types of associated weather. Describe evidence that supported the theory of continental drift. Describe how air masses interact at cold, warm, stationary, and occluded fronts and describe the clouds and weather they may produce. Describe major agents of mechanical weathering and of chemical weathering, how the agents cause each kind of weathering, and how mechanical weathering and chemical weathering interact to enhance each other's effects. Name and locate on a world map the three main climate zones (polar, temperate, and tropical) and explain variation in climate in terms of intensity of solar energy, wind, landforms, and ocean currents. Explain how sedimentary rocks are formed and identify features that help determine the</p>

		type of environment in which they formed.
Semester 1 Assessment 2 Semester 1 Assessment		
Water on Earth 2 Water and the Water Cycle		Explain the transfer of energy between the atmosphere and hydrosphere. Describe the distribution of water in the atmosphere, lithosphere, and hydrosphere. Interpret diagram of the hydrologic cycle. Compare and contrast freshwater and salt water.
Water on Earth 3 Ocean Water		Identify factors that affect the salinity of ocean water. Recognize that the temperature of the ocean's surface water varies by geographic location. Describe the composition of ocean water. Explain how temperature and pressure vary at different depths in the ocean.
Water on Earth 4 Ocean Currents		Explain that wind and forces between air and water cause surface currents. Interpret a diagram that shows major ocean currents and prevailing winds. Relate convection to the formation of deep-ocean currents. Describe the effect of earth's rotation on ocean currents. Distinguish surface currents from deep-ocean currents.
Water on Earth 5 Ocean Waves		Describe wave motion in water as particles set in circular motion. Relate wind speed to the amount of energy transferred to waves. Define beaches as dynamic systems whereby rivers and ocean waves deliver sand that may alter coastal landforms.
Water on Earth 6 Ocean Tides		Explain the relationship between ocean tides and the gravitational interaction of the earth, moon, and sun. Identify positions of the earth, moon, and sun that result in a monthly cycle of spring tides and neap tides.
Water on Earth 7 Water on Earth Unit Review		Explain how wind blowing on ocean water results in waves and surface currents. Explain the hydrologic cycle. Recognize factors influencing salinity of ocean water, explain how salinity and temperature of the water are related to its density, and explain how differences in these parameters result in major movements of deep-ocean water. Recognize that radiation from the sun warms the upper layer of ocean water, but cannot penetrate to great depths, resulting in two distinct layers of water - warm and cold - separated by boundary layer known as the thermocline. Explain how the gravitational interaction of the earth, moon, and sun causes tides.

Water on Earth 8 Water on Earth Unit Assessment		
Energy and Earth's Resources 2 Energy Resources	SC8.1.12, SC8.2.4, SC8.3.1, SC8.3.2	Identify major nonrenewable energy resources: oil (petroleum), coal, natural gas, and nuclear fission fuel (uranium). Identify important renewable resources: solar energy, biomass, moving water, wind, and geothermal energy. Distinguish between renewable and nonrenewable energy resources.
Energy and Earth's Resources 3 Fossil Fuels	SC8.1.11, SC8.2.4, SC8.3.1, SC8.3.2	Compare and contrast the formation of fossil fuels. Recognize oil as the predominant source of energy consumed in the United States. Explain that the sun is the ultimate source of energy for nonrenewable resources such as fossil fuels (e.g., oil, coal, and natural gas). Recognize coal as the most abundant fossil fuel available in the United States.
Energy and Earth's Resources 4 Consumption and Environmental Effects	SC8.2.4, SC8.3.1, SC8.3.2	Explain how burning coal produces air pollution. Interpret a graph that compares the amount of air pollution produced by burning different fossil fuels (coal, oil, and natural gas). Analyze the economic and environmental costs and benefits of industrial growth. Describe consequences of fossil fuel consumption, such as air pollution and environmental degradation.
Energy and Earth's Resources 5 Alternative Energy Sources	SC8.1.12, SC8.2.4	Recognize that geothermal energy, derived from earth's internal heat, can be collected and used to make electricity. Distinguish between solar thermal energy (for heat and hot water) and solar electric energy (for electricity). Identify biomass energy sources, including wood, manure, garbage, and agricultural waste. Describe how wind turbines and farms capture energy to generate electricity.
Energy and Earth's Resources 6 Resource Management	SC8.2.4, SC8.3.1, SC8.3.2	Give examples of ways in which the use of earth's resources by human beings has changed. Define conservation as the preservation, management, and restoration of earth's resources. Describe how wind turbines and farms capture energy to generate electricity.
Energy and Earth's Resources 7 LAB: Power from Tides	SC8.1.12, SC8.2.4, SC8.2.5	Explain the benefits and costs of using tides for energy. Use data to draw comparisons or relationships between variables. Explain how power is generated from tides (barrage holds water during high tide, water is released, turns turbine, water is stored, turbine reverses during low tide letting stored water back out to sea). Evaluate the possibility of constructing a tidal power plant in a certain location based on data.

<p>Energy and Earth's Resources 8 Energy and Earth's Resources Unit Review</p>		<p>Explain how each of the major energy resources is used to generate electricity, heat, and other types of energy. Compare major energy resources in terms of safety, usage, abundance, pollution, waste disposal, and aesthetic considerations. Describe examples of alternative energy sources and the costs and benefits associated with their use. Name and distinguish between renewable and nonrenewable resources. Define conservation as the preservation, management, and restoration of earth's resources. Recognize and describe some of the ways that people use renewable and nonrenewable resources for energy production. Define a fossil fuel and compare how the three fossil fuels (coal, oil, and natural gas) form.</p>
<p>Energy and Earth's Resources 9 Energy and Earth's Resources Unit Assessment</p>		
<p>Our Place in the Universe 2 Origin of the Universe</p>	<p>SC8.3.1</p>	<p>Summarize main points of, and major evidence offered by scientists for, the big bang theory. Describe the observations that galaxies are moving away from us as evidence that the universe is expanding as result of the big bang.</p>
<p>Our Place in the Universe 3 Galaxies</p>		<p>Define a light-year as the distance light travels in one earth year. Describe distances in space as measured in light-years. Identify the shapes of different galaxies. Recognize that the universe consists of many galaxies with billions of stars. Recognize that there are vast distances that separate these galaxies and stars from one another.</p>
<p>Our Place in the Universe 4 Gravitational Forces</p>	<p>SC8.1.7</p>	<p>Explain that gravity is force of attraction and that gravitational forces act on every mass in the universe. Recognize that mass and distance determine the amount of gravitational force between any two objects. Explain that gravity holds groups of celestial bodies together, including stars and planets, asteroids, and other orbiting bodies.</p>
<p>Our Place in the Universe 5 Rotation and Revolution</p>	<p>SC8.1.7</p>	<p>Define revolution as the period in which a planet makes one complete orbit around the sun. Recognize that the planets in the solar system revolve around the sun in elliptical orbits. Define rotation as the period in which a planet makes one complete turn o its axis.</p>
<p>Our Place in the Universe 6 The Solar System</p>	<p>SC8.1.7</p>	<p>Explain how the sun's gravity holds earth and the other planets in their orbits. Describe the solar system as a system that includes the sun, earth, and other planets, moons, and other small objects, such as asteroids and comets. Explain the currently</p>

		accepted scientific account of the formation of the solar system. Distinguish objects inside the solar system from objects outside the solar system.
Our Place in the Universe 7 The Inner Planets	SC8.1.7	Identify the asteroid belt, located between the inner and outer planets. Compare the planets in terms of their relative size and distance from the sun. Identify and describe the inner planets (Mercury, Venus, Earth, Mars).
Our Place in the Universe 8 The Outer Planets		Identify and describe the outer planets (Jupiter, Saturn, Uranus, Neptune). Compare the planets in terms of their relative size and distance from the sun.
Our Place in the Universe 9 Earth's Seasons	SC8.1.7	Demonstrate how the angle of sunlight striking the earth changes at different points during its revolution, due to the earth's rotational tilt. Explain that seasonal changes are caused by the earth's tilt on its axis. Define the summer and winter solstice and the spring and fall equinox. Explain that earth's rotation causes night and day.
Our Place in the Universe 11 Asteroids, Comets, and Meteoroids		Describe other objects in the solar system, such as asteroids, comets, and meteoroids. Explain the interaction of the sun and comets in the solar system.
Our Place in the Universe 12 The Moon	SC8.1.7	Explain that the same side of the moon always faces the earth because the moon's rotational period is equal to its revolution around the earth. Describe the moon's surface features (e.g., craters, mare, terrae) Recognize that the moon reflects light from the sun and has no light of its own.
Our Place in the Universe 13 Moon Phases		Demonstrate that the position of the moon, relative to the sun and earth, causes lunar phases. Explain that the same side of the moon always faces the earth because the moon's rotational period is equal to its revolution around the earth. Identify and arrange pictures of lunar phases and explain why the moon appears to change shape.
Our Place in the Universe 14 Eclipses		Compare and contrast a solar eclipse with a lunar eclipse. Demonstrate the relative positions of the earth, sun, and moon during solar and lunar eclipses. Explain how an eclipse occurs.
Our Place in the Universe 15 Unmanned Space Exploration	SC8.2.4	Describe types of unmanned space exploration technology. Describe the purpose of interplanetary space missions.

<p>Our Place in the Universe 16 Manned Space Exploration</p>	<p>SC8.2.4</p>	<p>Describe the purpose and results of the Apollo space missions. Describe types of manned space exploration technology. Describe how space travel affects the human body.</p>
<p>Our Place in the Universe 17 Our Place in the Universe Unit Review</p>		<p>Recognize the main features of the big bang theory, which most scientists accept as a description of the origin of the universe. Describe the names and purposes of major events in the history of space exploration. Describe how the predominant view of the solar system and universe has changed over time. Explain how the phases of the moon and how lunar and solar eclipses depend on the relative positions of the moon, earth, and sun. Describe the main elements making up stars, including the sun; the relative locations of the orbits of the planets; a unique property of each planet; and the relative sizes and masses of the sun and the planets. State a date at or close to each of the summer and winter solstices and the spring and fall equinoxes, and demonstrate the position of the earth in its orbit at each of these times. Recognize that gravity holds together groups of celestial bodies, including stars with their planets, asteroids, and other orbiting bodies, stars grouped in galaxies, and galaxies grouped in clusters. Recognize that Newton's universal law of gravitation explains the nature of the orbits of the planets and other objects in the solar system around the sun. Explain the most current, most widely accepted theory of the origin of the solar system. Explain how the tilt of the earth's axis of rotation with respect to its orbit around the sun causes the seasons. Recognize that the moon's rotational period is the same as its period of revolution around the earth, so that the same side of the moon continually faces the earth.</p>
<p>Our Place in the Universe 18 Our Place in the Universe Unit Assessment</p>		
<p>1 Semester 2 Assessment 1 Semester Review</p>		<p>Recognize the main features of the big bang theory, which most scientists accept as a description of the origin of the universe. Explain the most current, most widely accepted theory of the origin of the solar system. Recognize factors influencing salinity of ocean water, explain how salinity and temperature of the water are related to its density, and explain how differences in these parameters result in major movements of deep ocean water. Compare major energy resources in terms of safety, usage, abundance, pollution, waste disposal, and aesthetic considerations. Explain how the tilt of the Earth's axis of rotation</p>

		<p>with respect to its orbit around the sun causes the seasons. Define a fossil fuel and compare how the three fossil fuels (coal, oil, and natural gas) form. Describe the main elements making up stars and Earth's sun; the relative locations of the orbits of the planets; a unique property of each planet; and the relative sizes and masses of the sun and the planets. Name and distinguish between renewable and non-renewable resources. Describe examples of alternative energy sources and the costs and benefits associated with their use. Recognize that the heating of surface water by the sun in large bodies of water often results in two relatively independent ocean layers.</p>
1 Semester 2 Assessment 2 Semester 2 Assessment		
1 Scientific Investigation 2 Scientific Methods	SC8.2.1, SC8.2.2	Distinguish a scientific investigation from a demonstration. Pose a specific question that can be investigated with scientific experimentation. Describe scientific investigation as observational or experimental. Identify sources of information used in scientific research. Recognize all handouts and notes for your science investigation should be kept in the Investigation Notebook.
1 Scientific Investigation 3 Design and Set Up Your Experiment	SC8.2.1, SC8.2.2	State the purpose of the experiment. Design an investigation to test a hypothesis and gather information. Formulate a hypothesis based on available information. Write a step-by-step procedure for the scientific investigation. Identify independent and dependent variables, constraints, and controls in your investigation. Recognize all handouts and notes for your science investigation should be kept in the Investigation Notebook.
1 Scientific Investigation 4 Data Collection	SC8.2.2	Design a data collection table to collect estimates, measurements, and results. Recognize all handouts and notes for your science investigation should be kept in the Investigation Notebook. Measure, record, calculate, and report results, using metric units. Collect data during a scientific investigation. Find the mean and mode for a data set.
1 Scientific Investigation 5 Data Analysis	SC8.2.2	Determine appropriate ways to report data from an investigation. Use graphs and charts to share experimental data. Collect data during a scientific investigation. Find the mean and mode for a data set.
1 Scientific Investigation 6	SC8.2.1, SC8.2.2,	Identify sources of information used in scientific research. Summarize an investigation in written report. Draw conclusions

Reporting Conclusions	SC8.2.3	based upon the results of an investigation. Identify possible sources of error in the experiment and in the data collected. Find the mean and mode for a data set.
1 Scientific Investigation 7 Create Display	SC8.2.1, SC8.2.2, SC8.2.3	Display scientific data using tables, charts, graphs, visuals, and written descriptions. Find the mean and mode for a data set.
1 Scientific Investigation 8 Oral Presentation	SC8.2.1, SC8.2.2, SC8.2.3	Develop a plan for an oral presentation. Communicate orally the background, methods, results, interpretation, and conclusions of an investigation. Find the mean and mode for a data set.