

Wyoming Department of Education Required Virtual Education Course Syllabus

Niobrara County School District # 1

Program Name	Wyoming Virtual Academy	Content Area	SC
Course ID	CALMS4005	Grade Level	4
Course Name	Science 4 Summit NG	# of Credits	
SCED Code		Curriculum Type	K12 Inc

COURSE DESCRIPTION

Students develop scientific reasoning and perform hands on experiments in Earth, Life, and Physical Sciences. They construct an electromagnet, identify minerals according to their properties, use chromatography to separate liquids, and assemble food webs. Students will explore topics such as:

- *The Interdependence of Life—producers, consumers, and decomposers; food webs*
- *Animal and Plant Interactions—populations; competition; predators and prey; symbiosis; animal behavior*
 - *Invertebrates—sponges; worms; mollusks; arthropods; echinoderms*
- *Chemistry—mixtures vs. solutions; distillation, evaporation, and chromatography*
 - *Forces and Fluids—pressure; forces in flight; density; buoyancy*
- *Human Body—nervous system (senses, reflexes, nerves, and brain); endocrine system (hormones, glands, growth, and digestion)*
- *Electricity and Magnetism—charges; magnets; static electricity; currents and circuits; electromagnetism*
- *Rocks and Minerals—the earth’s interior; crystals; minerals; rock cycle; plate tectonics; volcanoes, earthquakes*
- *The Fossil Record and the History of Life—types of fossils; the Paleozoic, Mesozoic, and Cenozoic eras*

WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK (Standard/Indicator) Use the Standards and Benchmarks as Spreadsheets
4-PS3-1	Use evidence to construct an explanation relating the speed of an object to the energy of that object.
4-PS3-2	Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

4-PS3-3	Ask questions and predict outcomes about the changes in energy that occur when objects collide.
4-PS3-4	Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.
4-PS4-1	Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move.
4-PS4-2	Develop a model to describe that light reflecting from objects and entering the eye allows objects to be seen.
4-PS4-3	Generate and compare multiple solutions that use patterns to transfer information.
4-LS1-1	Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction.
4-LS1-2	Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways.
4-ESS1-1	Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.
4-ESS2-1	Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.
4-ESS2-2	Analyze and interpret data from maps to describe patterns of Earth's features.
4-ESS3-1	Obtain and combine information to describe that energy and fuels are derived from renewable and non-renewable resources and how their uses affect the environment.
4-ESS3-2	Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.
3-5-ETS1-1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
3-5-ETS1-2	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
3-5-ETS1-3	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
3-LS1-1	Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

3-LS2-1	Construct an argument that some animals form groups that help members survive.
3-LS3-1	Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms.
3-LS3-2	Use evidence to support the explanation that observable traits can be influenced by the environment.
3-LS4-1	Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.
3-LS4-2	Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing.
3-LS4-3	Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.
3-LS4-4	Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.
5-PS1-1	Develop a model to describe that matter is made of particles too small to be seen.
5-PS1-2	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.
5-PS1-3	Make observations and measurements to identify materials based on their properties.
5-PS1-4	Conduct an investigation to determine whether the mixing of two or more substances results in new substances.

UNIT OUTLINE		
UNIT OUTLINE	STANDARD#	OUTCOMES OBJECTIVES/STUDENT CENTERED GOALS
1 Ecosystems: Interdependence of Life 1 Ecosystems and the Environment		Identify both living and nonliving parts of an ecosystem. Define a population as a group of individuals of the same type that live in a particular area. Define a community as a group of all the populations that live and interact with each other in a particular area. Describe how organisms depend on each other for survival, such as using each other as sources for food and shelter. Explore concepts to be addressed during the year in Science 4.

<p>1 Ecosystems: Interdependence of Life 2 Producers, Consumers, and Decomposers</p>		<p>State that all organisms need some source of energy to live. Distinguish between herbivores, carnivores, and omnivores according to their diets. Identify examples of producers, consumers, and decomposers. Describe the roles of producers, consumers, and decomposers in an ecosystem. Describe how nutrients are continuously recycled through an ecosystem among producers, consumers, and decomposers.</p>
<p>1 Ecosystems: Interdependence of Life 3 Food Webs: Energy Flow in an Ecosystem</p>		<p>State that sunlight is the original source of energy for almost all ecosystems and therefore, all life. Explain how a food chain shows the pathway along which food is transferred from one organism to another. Explain how a food web combines food chains to show the interconnected feeding relationships in an ecosystem. Recognize that an energy pyramid is a diagram that shows the amount of energy available at each level of an ecosystem. Recognize that energy is lost as you move up through levels of the energy pyramid.</p>
<p>1 Ecosystems: Interdependence of Life 4 Cycles in Ecosystems</p>		<p>Recognize that cycles in nature provide organisms with the food, air, and water they need to live, grow, and reproduce. Describe how water continuously moves through the water cycle as it evaporates, condenses, and precipitates. Identify the ways carbon is cycled through both living (organic) and nonliving (inorganic) parts of an ecosystem. Use the greenhouse effect to explain how humans have caused a change in the carbon cycle.</p>
<p>1 Ecosystems: Interdependence of Life 5 Changing Environmental Conditions</p>		<p>Recognize that conditions within an ecosystem are constantly changing, causing plants and animals to adapt, move, or die. Identify a limiting factor as any environmental condition that can reduce an organism's ability to survive (for example, changes in temperature and abundance of food, water, sunlight, and nutrients). State that organisms can live within a certain range of environmental conditions. Recognize that limiting factors can change from ecosystem to ecosystem and from organism to organism.</p>
<p>1 Ecosystems: Interdependence of Life 6 Unit Review and Assessment</p>	<p>4-LS1-1 4-LS1-2 3-LS1-1 3-LS2-1 3-LS3-1 3-LS3-2 3-LS4-1</p>	<p>Recognize that cycles in nature provide organisms with the food, air, and water they need to live, grow, and reproduce. Recognize that conditions within an ecosystem are constantly changing, causing plants and animals to adapt, move, or die. Explain that ecosystems are characterized by both their living and nonliving parts. Recognize that objects with the same electrical charges repel and objects with different electrical charges attract. Explain that certain organisms, such as insects, fungi, and bacteria, depend on dead plants and</p>

	<p>3-LS4-2</p> <p>3-LS4-3</p> <p>3-LS4-4</p>	<p>animals for food. Recognize examples of populations, communities, and ecosystems. Explain that an environment is the living and nonliving parts of an ecosystem. State that sunlight is the major source of energy for ecosystems, and describe how its energy is passed from organism to organism in food webs. Describe some ways in which organisms are dependent on each other for survival, including the need for food, pollination, and seed dispersal. Recognize that all organisms need some source of energy to stay alive. Explain how producers and consumers (herbivores, carnivores, omnivores, and decomposers) are related in food chains and food webs in an ecosystem. Explain that, in all environments, organisms are constantly growing, reproducing, dying, and decaying. Recognize that conditions within an ecosystem are constantly changing. Further recognize that some plants and animals survive because they either adapt to such changes or move to another locations, while others die.</p>
<p>2 Plant and Animal Interactions 1 Populations</p>		<p>State that a population is a group of individuals of the same type living in a certain area. Identify individuals in a population as clumped, uniformly spaced, or randomly spaced. , Identify birth and immigration as the two main factors that cause an increase in a population. , Identify death and emigration as the two main factors that cause a decrease in a population. Calculate a change in population size. , Define sampling as a way to estimate the size and distribution of a population. Identify the resource, such as food, sunlight, water, and space, for which organisms are competing.</p>
<p>2 Plant and Animal Interactions 2 Competition</p>		<p>Recognize ways in which organisms in a community compete for food, water, and space. Name two ways animals avoid, or reduce, competition (for example, moving to other habitats, eating different types of food, hunting at different times). Recognize that competition can occur among individuals of the same species in the same population as well as among different species in different populations. , Identify the resource, such as food, sunlight, water, and space, for which organisms are competing. Recognize that in predator-prey relationships, the size of each population can change in regular cycles.</p>
<p>2 Plant and Animal Interactions 3 Predators and Prey</p>		<p>Identify ways predators locate and capture their prey. Identify ways prey defend themselves against predators. Recognize that predator-prey relationships can help balance the structure of the community. Recognize that in predator-prey</p>

		relationships, the size of each population can change in regular cycles.
2 Plant and Animal Interactions 4 Symbiosis		Explain that the annual flooding of rivers allowed people to grow grain such as rice. Define mutualism as an interaction between two organisms in which both benefit from the relationship. Define commensalism as an interaction between two organisms in which one organism gains from the relationship and the other neither benefits nor harms the other. Define parasitism as an interaction between two organisms in which one gains from the relationship and harms the other. Recognize that organisms in an ecosystem can compete for resources such as food, shelter, and water.
2 Plant and Animal Interactions 5 Animal Behavior		State that a population is a group of individuals of the same type living in a certain area. Identify symbiotic relationships between organisms (mutualism, commensalism, and parasitism). Identify behaviors as innate or learned. Identify behaviors that help animals survive. Recognize that members of a society have special roles and work together to increase the group's chances of survival. State that a population is a group of individuals of the same type living in a certain area. Recognize that organisms in an ecosystem can compete for resources such as food, shelter, and water. Classify organisms as predators and prey. Describe factors that affect the growth of a population. Explain that living things cause changes in their ecosystems, and that some of these changes are detrimental to other organisms, and some are beneficial. Explain that an animal's behavior helps it survive.
2 Plant and Animal Interactions 6 Plant and Animal Interactions Unit Review and Assessment	4-LS1-1 4-LS1-2 3-LS1-1 3-LS2-1 3-LS3-1 3-LS3-2 3-LS4-1 3-LS4-2 3-LS4-3 3-LS4-4 4-ESS3-2 3-5-ETS1-1 3-5-ETS1-2	Identify symbiotic relationships between organisms (mutualism, commensalism, and parasitism). Identify behaviors as innate or learned. State that a population is a group of individuals of the same type living in a certain area. Recognize that organisms in an ecosystem can compete for resources such as food, shelter, and water. Classify organisms as predators and prey. Describe factors that affect the growth of a population. Explain that living things cause changes in their ecosystems, and that some of these changes are detrimental to other organisms, and some are beneficial. Explain that an animal's behavior helps it survive.

3 Chemistry of Solutions 1 Mixtures and Solutions		Define a substance as anything that contains only one kind of molecule. Describe a mixture as a combination of two or more substances that maintain their individual properties and do not go through a chemical change when mixed. , Define a solution as a mixture in which the substances are completely and evenly mixed down to their individual molecules. Recognize that solutions can be made from combinations of gases, liquids, and solids.
3 Chemistry of Solutions 2 What's Dissolving? Solvents and Solutes		Define a solute as the substance that dissolves in a solution. Define a solvent as the substance that dissolves a solute to make a solution. Identify solute and solvents in different solutions.
3 Chemistry of Solutions 3 Separating Solutions		Describe ways to separate solutions, such as evaporation, chromatography, and distillation.
3 Chemistry of Solutions 4 Dissolving Solutions Quickly		Describe two ways to increase the rate at which solids dissolve in liquids (by crushing them into smaller pieces and by stirring). Recognize that breaking up a solute into smaller pieces increases its surface area.
3 Chemistry of Solutions 5 Solubility		Recognize that increasing the temperature of a solvent usually increases the rate at which a solute dissolves. Recognize that increasing the temperature of a solvent can change the solubility of a solid solute. , Define solubility as the maximum total amount of a solid that can dissolve into a given quantity of a particular solvent at a given temperature. Recognize that not all substances dissolve in a given quantity of water in the same amounts. Classify substances as soluble, insoluble, and somewhat soluble.
3 Chemistry of Solutions 6 Concentrations		Compare the concentrations of different solutions and describe them as concentrated or dilute. State the concentration of solutions as the number of grams of solute per 100 grams of solvent. Recognize that, at a given temperature, a solution is saturated when the maximum amount of solute has been dissolved into the solvent.
3 Chemistry of Solutions 7 Chemistry of Solutions: Unit Review and Assessment	4-PS4-3 5-PS1-1 5-PS1-2 5-PS1-3 5-PS1-4	Describe a mixture as a combination of two or more substances that maintain their individual properties and do not go through a chemical change when mixed. , Define a solution as a mixture in which the substances are completely and evenly mixed down to their individual molecules. Recognize that solutions can be made from combinations of

		<p>gases, liquids, and solids. Define a solute as the substance that dissolves in a solution. Define a solvent as the substance that dissolves a solute to make a solution. Describe ways to separate solutions, such as evaporation, chromatography, and distillation. Describe two ways to increase the rate at which solids dissolve in liquids (by crushing them into smaller pieces and by stirring). Recognize that increasing the temperature of a solvent usually increases the rate at which a solute dissolves. Recognize that increasing the temperature of a solvent can change the solubility of a solid solute. , Recognize that not all substances dissolve in a given quantity of water in the same amounts. Classify substances as soluble, insoluble, and somewhat soluble. Compare the concentrations of different solutions and describe them as concentrated or dilute.</p>
4 Forces In Fluids 1 Pressure		<p>Explain that atmospheric pressure decreases with height above sea level and water pressure increases with depth below sea level. , State that a substance that flows--for example, a gas or a liquid--is a fluid. Define pressure as the force exerted on a surface and recognize that pressure is measured in a unit called the pascal. Describe the forces present in flight: lift, weight, thrust, and drag.</p>
4 Forces In Fluids 2 Forces in Flight		<p>Recognize that density of a solid stays the same even if the object's shape or size changes. , Describe the forces present in flight: lift, weight, thrust, and drag.</p>
4 Forces In Fluids 3 Density		<p>Define density as how tightly the matter of an object is packed together. Recognize that density of a solid stays the same even if the object's shape or size changes. , Compare the densities of objects with the same shape and volume. Predict whether a substance will sink or float by comparing its density with the density of water.</p>
4 Forces In Fluids 4 Buoyancy		<p>Predict whether a substance will sink or float by comparing its density with the density of water. Explain Archimedes' observation that the buoyant force of water on an object is equal to the weight of water that the object displaces. Recognize that an object denser than water will sink unless it is shaped so that the total density of the object is less than an equal volume of water. Define buoyancy as an object's tendency to float.</p>

4 Forces In Fluids 5 Shape and Buoyancy		Recognize that an object denser than water will sink unless it is shaped so that the total density of the object is less than an equal volume of water. Identify how the shape of an object affects its ability to float. Define pressure as the force exerted on a surface and recognize that pressure is measured in a unit called the pascal.
4 Forces In Fluids 6 Forces in Fluids Unit Review	4-PS3-1 3-5-ETS1-3	Explain that atmospheric pressure decreases with height above sea level and water pressure increases with depth below sea level. , Recognize that an object denser than water will sink unless it is shaped so that the total density of the object is less than an equal volume of water. Define pressure as the force exerted on a surface and recognize that pressure is measured in a unit called the pascal. Describe the forces present in flight: lift, weight, thrust, and drag. Measure the density of a substance or object and predict whether it will sink or float in water.
5 The Human Body 1 Working Together		Identify the various body systems and their functions. Define a body system as cells, tissues and organs working together to perform a certain job. Describe the five senses and their related sensory organs.
5 The Human Body 2 Under Control: Your Nervous System		Describe the function of the nervous system and identify its parts. Describe the five senses and their related sensory organs. Compare the voluntary nervous system with the involuntary nervous system. Define a reflex as movements that happen very quickly without your thinking about them. Explain how neurons carry impulses throughout the body.
5 The Human Body 3 Nerves		Explain how neurons carry impulses throughout the body. Identify the parts of a neuron and their functions. Name the three main parts of the brain: the cerebrum, cerebellum and brain stem.
5 The Human Body 4 The Cerebrum, Cerebellum, and Brain Stem		Name the three main parts of the brain: the cerebrum, cerebellum and brain stem.
5 The Human Body 5 More About the Brain / Other Brain Structures		Identify the locations and describe some of the main functions of the cerebellum, brain stem, and the cerebrum.

5 The Human Body 6 Spinal Cord and Nerves		State that the spine protects the spinal cord. Describe how the spinal cord helps in transmitting messages to and from the brain. Describe how a nerve signal is transmitted through a reflex arc.
5 The Human Body 7 Endocrine System: Glands and Hormones		Identify the major glands in the endocrine system and describe their functions. Describe how glands and their hormones affect body processes. State that the endocrine system is made up of glands and hormones that function over different amounts of time.
5 The Human Body 8 Growing Up		Describe how the pituitary gland affects human growth. Describe aspects of a career in neuroscience.
5 The Human Body 9 Daily Processes and Hormones		Recognize that hormones play a role in controlling daily bodily processes like blood-glucose regulation, hunger, digestion, and the sleep-wake cycle. Explain how insulin and glucagon act in the regulation of blood sugar. Explain how abnormalities in the hormone insulin, or in its use by the cells in the body, can cause diabetes. Describe the stages of the sleep-wake cycle.
5 The Human Body 10 Unit Review and Assessment: The Mysterious Organism	4-LS1-1 4-LS1-2 4-PS4-2	Explain that the various systems of the human body function because the cells, tissues, and organs all work together. Describe that the brain gets information about the outside world and the rest of the body through nerves, and uses nerves to direct actions by other parts of the body. , Define senses, reflexes, voluntary nervous system, and involuntary nervous system. Identify various parts of the nervous system (such as the brain, spinal cord, nerves, nerve cells, and neurotransmitters), along with their structures and functions. Explain that the endocrine system is composed of glands and chemical messengers called hormones, and they function over a wide range of time scales. Identify locations of some major glands of the endocrine system (for example, adrenals, thyroid, pituitary, pancreas).
5 The Human Body 11 Semester Review and Assessment	4-LS1-1 4-LS1-2	Describe how nutrients are continuously recycled through an ecosystem among producers, consumers, and decomposers. Describe how water continuously moves through the water cycle as it evaporates, condenses, and precipitates. Recognize ways in which organisms in a community compete for food, water, and space. Identify behaviors as innate or learned. Define a solvent as the substance that dissolves a solute to make a solution. Describe ways to separate solutions, such as evaporation, chromatography, and distillation. Recognize that

		<p>increasing the temperature of a solvent can change the solubility of a solid solute. , Recognize that not all substances dissolve in a given quantity of water in the same amounts. Describe how glands and their hormones affect body processes. Describe that the brain gets information about the outside world and the rest of the body through nerves, and uses nerves to direct actions by other parts of the body. , Identify various parts of the nervous system (such as the brain, spinal cord, nerves, nerve cells, and neurotransmitters), along with their structures and functions. Identify locations of some major glands of the endocrine system (for example, adrenals, thyroid, pituitary, pancreas). Recognize examples of populations, communities, and ecosystems. State that sunlight is the major source of energy for ecosystems, and describe how its energy is passed from organism to organism in food webs. Explain how producers and consumers (herbivores, carnivores, omnivores, and decomposers) are related in food chains and food webs in an ecosystem. Describe how immigration and emigrations affect the size of a population. Define solubility as the maximum total amount of a solid that can dissolve into a given quantity of a particular solvent at a given temperature.</p>
6 Classification of Invertebrates 1 Classifying Animals		<p>Explain that living things are sorted into different groups based on certain common characteristics. State that vertebrates are organisms that have a backbone. State that invertebrates are organisms that do not have a backbone. Recognize that invertebrates are not a single taxonomic group but are represented in many groups.</p>
6 Classification of Invertebrates 2 The World of Sponges		<p>Identify characteristics of sponges (they have the ability to regenerate damaged parts, they reproduce through budding, and they live only in water). Identify the parts of a sponge (ostium, canal, osculum, and flagellum).</p>
6 Classification of Invertebrates 3 Cnidarians		<p>Identify a characteristic of cnidarians (they have tentacles with stinging cells). Identify medusa and polyp as the two common body types of cnidarians. Identify the three functions of tentacles (to sting predators, sense the environment, and bring food into the animal's mouth). State that most cnidarians help build up coral reefs.</p>
6 Classification of Invertebrates 4 The		<p>Identify characteristics of roundworms (they bend from side to side to move, have nostrils but no eyes). Compare segmented worms to roundworms and flatworms. Identify a characteristic of segmented worms (their body is made up of</p>

Diverse World of Worms		many ring-like segments). Identify characteristics of flatworms (they have eyespots and the ability to regenerate when damaged). State that the term worm is used for animals in three different phyla.
6 Classification of Invertebrates 5 Mighty Mollusks		Identify characteristics of mollusks (they have a soft body, a thick skin called a mantle, and a foot for movement). Identify three ways mollusks can move (using a foot extended from their body, filling their shell with air to float away, pulling with their arms, or taking water in and pushing it out of the siphon). Identify characteristics of snails and slugs (they have stalked eyes, antennae, radula, and a foot on the underside of the belly for movement). Identify characteristics of clams, mussels, and oysters (they have two shells joined by a hinge, a siphon, and a foot for movement). Identify characteristics of octopuses and squids (they have a large brain, highly developed eyes, and long arm-like appendages).
6 Classification of Invertebrates 6 Arthropods		Identify common characteristics of arthropods (they have jointed legs, a segmented body, and an exoskeleton). Identify characteristics of insects (they have three pairs of legs, three body segments--head, thorax, and abdomen--and one or two pairs of wings). Identify characteristics of crustaceans (they have five pairs of jointed legs, two pairs of antenna, and an exoskeleton).
6 Classification of Invertebrates 7 Echinoderms		Identify characteristics of echinoderms (they are protected by hard plates, their body has radial symmetry, and they move by pumping water into their tube feet). Identify characteristics of sea stars (they live only in water, they have suction cups on their tube feet, their body has radial symmetry, and they are able to regenerate their body when it is damaged).
6 Classification of Invertebrates 8 Unit Review and Assessment	4-LS1-1 4-LS1-2	Identify different groups of invertebrates (sponges, cnidarians, worms, mollusks, arthropods, echinoderms) according to their common characteristics.
7 Electricity and Magnetism 1 Electric Charges and Magnetic Poles		Recognize that objects with the same electrical charges repel and objects with different electrical charges attract. Describe the Earth's magnetic field and identify magnetic north and south.
7 Electricity and Magnetism 2 Magnet Madness		Describe the Earth's magnetic field and identify magnetic north and south. Explain how to construct a temporary

		magnet. Explain that lightning is produced as a result of static discharge.
7 Electricity and Magnetism 3 Static Electricity - Truly Shocking		Explain that friction can build up static electrical charges when two objects are rubbed together and transfer electrons from one surface to the other. Recognize that static electricity is the buildup of electrical charges on an object. Explain that lightning is produced as a result of static discharge. Recognize that electric current is the flow of electrons through a wire.
7 Electricity and Magnetism 4 Electric Currents		Identify the parts of a circuit: battery, light, wire, and switch. Differentiate between a series circuit and a parallel circuit. Recognize that electric current is the flow of electrons through a wire. State that electric currents flow easily through materials that are conductors and do not flow easily through materials that are insulators.
7 Electricity and Magnetism 5 Resistance, Conductors, Insulators		State that electric currents flow easily through materials that are conductors and do not flow easily through materials that are insulators. Give examples of conductors and insulators. Describe how certain materials affect the flow of electricity through a wire. State that electric current produces magnetic fields and that an electromagnet can be made by wrapping a wire around a piece of iron and then running electricity through the wire.
7 Electricity and Magnetism 6 Electromagnetism	4-PS3-1	State that electric current produces magnetic fields and that an electromagnet can be made by wrapping a wire around a piece of iron and then running electricity through the wire. Recognize that electromagnets are used in electric motors, generators, and other devices, such as doorbells and earphones. Describe how to increase or decrease the strength of an electromagnet.
7 Electricity and Magnetism 7 Unit Review and Assessment	4-PS3-1 4-PS3-2 4-PS3-3 4-PS3-4 3-5-ETS1-3	Recognize that objects with the same electrical charges repel and objects with different electrical charges attract. Describe the Earth's magnetic field and identify magnetic north and south. Explain how to construct a temporary magnet. Explain that friction can build up static electrical charges when two objects are rubbed together and transfer electrons from one surface to the other. Identify the parts of a circuit: battery, light, wire, and switch. State that electric currents flow easily through materials that are conductors and do not flow easily through materials that are insulators. Recognize that electromagnets are used in electric motors, generators, and other devices, such as doorbells and earphones. Demonstrate

		that magnets have two poles (north and south) and that like poles repel each other while unlike poles attract each other. State that electric currents produce magnetic fields and that an electromagnet can be made by wrapping a wire around a piece of iron and then running electricity through the wire. Differentiate between series and parallel circuits. Describe the earth's magnetic field and identify magnetic north and south.
8 Rocks and Minerals 1 Rocks and Minerals		Identify the four main layers of the Earth and describe their characteristics. Explain that rock is composed of different combinations of minerals.
8 Rocks and Minerals 2 Crystal Shapes		Describe two types of crystal structures--cubic and hexagonal. Explain that the size of a crystal depends on the rate at which it was cooled.
8 Rocks and Minerals 3 Properties of Minerals		Recognize that you can identify minerals by their color, luster, hardness, streak, and specific gravity.
8 Rocks and Minerals 4 Mining of Minerals		Define ore as rock with a high metal content. Describe the activity of producing aluminum from bauxite as an example of processing ore. Describe some of the everyday uses of minerals.
8 Rocks and Minerals 5 The Rock Cycle		Identify the three different types of rocks and how they form. Describe what is meant by the term rock cycle.
8 Rocks and Minerals 6 Drifting Continents		Describe Alfred Wegener's theory of continental drift. Explain that earth's crust is made up of rigid plates that are always moving. Describe three types of plate boundaries.
8 Rocks and Minerals 7 Volcanoes		Identify the main parts of a volcano: magma chamber, vent, and crater. Identify and describe the three types of land volcanoes (cinder cone, composite, and shield). , Explain how volcanoes are formed.
8 Rocks and Minerals 8 Earthquakes		State that an earthquake is the shaking or sliding of the Earth's surface. Explain how a seismograph is used to determine earthquake activity. Describe how the Richter scale is used to measure an earthquake's magnitude.
8 Rocks and Minerals 9 Rocks and Minerals Unit Review and Assessment	4-ESS1-1 4-ESS2-1 4-ESS2-2	Explain that rock is composed of different combinations of minerals. Recognize that you can identify minerals by their color, luster, hardness, streak, and specific gravity. Identify and describe the properties of the Earth's layers: crust, mantle, outer core, and inner core. Recognize that minerals

		<p>have their own distinct crystal shape, determined by the arrangement of their atoms. Differentiate among igneous, sedimentary, and metamorphic rocks by referring to their properties and methods of formation. Explain that the surface of the Earth is made up of rigid plates that are in constant motion, and that the motion of these plates against, over, and under each other causes earthquakes, volcanoes, and the formation of mountains. Identify the various structures of volcanoes, describe the types of eruptions that form them, and explain how they change the landscape. Describe what happens during an earthquake and how the landscape can change as a result. Recognize that ore is rock with a high metal content, and that most metals come from minerals mined from the Earth's crust.</p>
9 Weathering, Erosion, and Deposition 1 Weathering		<p>Identify examples of physical and chemical weathering. Describe different causes of weathering, such as ice, growth from plants, and acid rain.</p>
9 Weathering, Erosion, and Deposition 2 Soils		<p>Describe a soil profile and explain how different horizons are formed. Describe properties of various soil types.</p>
9 Weathering, Erosion, and Deposition 3 Erosion and Deposition: Gravity and Water		<p>Describe how the slope of the land affects erosion. Describe how gravity and moving water weather, erode, and shape the surface of the land by transporting sediment from one location to another, where it is deposited.</p>
9 Weathering, Erosion, and Deposition 4 Erosion, Transport, and Deposition: Glaciers and Wind		<p>Describe how glaciers are formed and differentiate between the continental and valley glaciers. Explain how glaciers move to erode and reshape the surface of the land. Describe how wind erodes and weathers the surface of the land.</p>
9 Weathering, Erosion, and Deposition 5 Unit Review and Assessment	<p>4-ESS1-1 4-ESS2-1 4-ESS2-2 4-PS4-1 4-PS4-3</p>	<p>Describe a soil profile and explain how different horizons are formed. Explain both the physical and the chemical weathering of rocks, and be able to classify examples of each. Explain that soil is a mixture of weathered rock, humus, air, and water. Describe how gravity, moving water, wind, and glaciers weather, erode, and shape the surface of the land by transporting sediment from one location to another, where it is deposited.</p>

10 Fossils and Geologic Time 1 Fossils and How They Form		Explain that fossils provide information about organisms that lived long ago. State that a fossil is a trace, print, or remain of an organism preserved over time in a rock. Identify the conditions under which fossils may form.
10 Fossils and Geologic Time 2 Reading the Fossil Record		Explain that fossils help scientists reconstruct the history of life on Earth. State that fossils provide evidence that many kinds of organisms that once lived on Earth are now extinct. Identify the different types of fossils, such as petrified, cast, and mold.
10 Fossils and Geologic Time 3 The Ever-Changing Earth		State that geologic time is divided into four sections: Precambrian, Paleozoic, Mesozoic, and Cenozoic. Recognize that scientists think that many kinds of organisms once lived on Earth have completely disappeared. Recognize that scientists think that some organisms alive today resemble organisms of the distant past.
10 Fossils and Geologic Time 4 The Precambrian Time and Paleozoic Era		Name one major event that occurred during the Precambrian time. Name one major event that occurred during the Paleozoic era. Name one organism that lived on the Earth during the Precambrian time. Name one organism that lived on the Earth during the Paleozoic era.
10 Fossils and Geologic Time 5 The Mesozoic and Cenozoic Eras		Name one major event that occurred during the Mesozoic era. Name one major event that occurred during the Cenozoic era. Name one organism that lived on the Earth during the Mesozoic era. Name one major event that occurred in each of the four geologic sections: Precambrian, Paleozoic, Mesozoic, and Cenozoic.
10 Fossils and Geologic Time 6 Unit Review and Assessment	4-ESS1-1 4-ESS2-1 4-ESS2-2	State that fossils provide evidence that many kinds of organisms that once lived on Earth are now extinct. Name one major event that occurred in each of the four geologic sections: Precambrian, Paleozoic, Mesozoic, and Cenozoic. Describe the conditions under which fossils may form and distinguish among the different types, such as petrified, mold, and cast. Explain that fossils provide information about organisms that lived long ago and help scientists reconstruct the history of life on Earth. Recognize that scientists divide geologic time into four main sections (Precambrian, Paleozoic, Mesozoic, and Cenozoic) and that each section covers one major stage in Earth's history.
10 Fossils and Geologic Time 7 _07 -	4-ESS1-1 4-ESS2-1	Demonstrate mastery of the semester's content. Demonstrate mastery of the skills taught in this unit. Identify death and

<p>Semester Review and Assessment</p>	<p>4-ESS2-2 4-ESS3-1 4-ESS3-2</p>	<p>emigration as the two main factors that cause a decrease in a population. Explain that fossils provide information about organisms that lived long ago. State that a fossil is a trace, print, or remain of an organism preserved over time in a rock. Identify the conditions under which fossils may form. Explain that fossils help scientists reconstruct the history of life on Earth. State that fossils provide evidence that many kinds of organisms that once lived on Earth are now extinct. Identify the different types of fossils, such as petrified, cast, and mold. State that geologic time is divided into four sections: Precambrian, Paleozoic, Mesozoic, and Cenozoic. Recognize that scientists think that many kinds of organisms once lived on Earth have completely disappeared. Recognize that scientists think that some organisms alive today resemble organisms of the distant past. Name one major event that occurred during the Precambrian time. Name one major event that occurred during the Paleozoic era. Name one organism that lived on the Earth during the Precambrian time. Name one organism that lived on the Earth during the Paleozoic era. Name one major event that occurred during the Mesozoic era. Name one major event that occurred during the Cenozoic era. Name one organism that lived on the Earth during the Mesozoic era. Name one major event that occurred in each of the four geologic sections: Precambrian, Paleozoic, Mesozoic, and Cenozoic. Describe the conditions under which fossils may form and distinguish among the different types, such as petrified, mold, and cast. Explain that fossils provide information about organisms that lived long ago and help scientists reconstruct the history of life on Earth. Recognize that scientists divide geologic time into four main sections (Precambrian, Paleozoic, Mesozoic, and Cenozoic) and that each section covers one major stage in Earth's history.</p>
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