

Wyoming Department of Education Required Virtual Education Course Syllabus

Natrona County School District # 1

Program Name	Natrona Virtual Learning	Content Area	SC
Course ID	NVA070201	Grade Level	2
Course Name	Science 2	of Credits	
SCED Code	70201	Curriculum Type	K1 Inc

COURSE DESCRIPTION

Students perform experiments to develop skills of observation and analysis, and learn how scientists understand the world. They demonstrate how pulleys lift heavy objects, make a temporary magnet and test its strength, and analyze the parts of a flower. Students will explore topics such as:

- Force—motion and simple machines; physicist Isaac Newton
- Magnetism—magnetic poles and fields; how a compass works
- Sound—how sounds are made; inventor Alexander Graham Bell
- Human Body—cells; the digestive system
- Geology—layers of the earth; kinds of rocks; weathering; geologist Florence Bascom
- Life Cycles—plants and animals

WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK_ (Standard/Indicator) Use the Standards and Benchmarks as Spreadsheets
SC4.1.1	Characteristics of Organisms: Students describe observable characteristics of living things, including structures that serve specific functions and everyday behaviors.
SC4.1.2.	Life Cycles of Organisms: Students sequence life cycles of living things, and recognize that plants and animals resemble their parents.
SC4.1.3.	Organisms and Their Environments: Students show connections between living things, their basic needs, and the environments.
SC4.1.4.	Properties of Earth Materials: Students investigate water, air, rocks, and soils to compare basic properties of earth materials.
SC4.1.5.	Objects in the Sky: Students describe observable objects in the sky and their patterns of movement.
SC4.1.6.	Changes in Earth and Sky: Students describe observable changes in earth and sky, including rapid and gradual changes to the earth's surface, and daily and seasonal

	changes in the weather.
SC4.1.7.	Properties of Objects: Students classify objects by properties that can be observed, measured, and recorded, including color, shape, size, weight, volume, texture, and temperature.
SC4.1.8.	Changes in States of Matter: Students demonstrate that the processes of heating and cooling can change matter from one state to another.
SC4.1.9.	Physical Phenomena: Students investigate physical phenomena commonly encountered in daily life, including light, heat, electricity, sound, and magnetism.
SC4.1.10	Position and Motion of Objects: Students demonstrate that pushing and pulling can change the position and motion of objects.
SC4.2.1.	Students research answers to science questions and present findings through appropriate means.
SC4.2.2.	Students use the inquiry process to conduct simple scientific investigations. Collect and organize data. Use data to construct simple graphs, charts, diagrams, and/or models. Draw conclusions and accurately communicate results, making connections to daily life. Pose or identify questions and make predictions. Conduct investigations to answer questions and check predictions.
SC4.2.3.	Students identify and use appropriate scientific equipment.
SC4.2.4.	Students properly use safety equipment and recognize hazards and safety symbols while practicing standard safety procedures.
SC4.3.1.	Students recognize the nature and history of science. Discuss how scientific ideas change over time. Describe contributions of scientists.
SC4.3.2.	Students recognize how scientific information is used to make decisions. Identify and describe local science issues, such as environmental hazards or resource management. Suggest feasible solutions and personal action plans to address an identified issue.

Metrics and Measurements 1		
Metrics and Measurements 1 Meet the Metrics	SC4.2.3	Identify some common tools used by scientists for measuring, such as a balance, a graduated cylinder, a metric ruler, and a thermometer. Explore concepts to be addressed during the year in Science 2.

Metrics and Measurements 2 Why Does a Meter Matter?	SC4.2.3	Know that 100 millimeters equal meter. Know that meters, centimeters, and millimeters are units of length.
Metrics and Measurements 3 Temperature Scales	SC4.1.4, SC4.2.3, SC4.2.4	Identify the boiling point of water, the freezing point of water, and the average body temperature. Compare temperatures on the Fahrenheit and Celsius scales. Create a temperature scale.
Metrics and Measurements 4 Let's Use a Liter		Recognize that there are 1000mL in a liter.
Metrics and Measurements 5 The Scientific Method	SC4.2.2	Identify the steps in the scientific method.
Metrics and Measurements 6 Let's Measure Mass	SC4.2.2	Measure mass, in grams, using a double-pan balance. Know that there are 1,000 grams in a kilogram. Interpret results on a bar graph.
Metrics and Measurements 7 Spring into Action		Know that 10 centimeters equal meter. Identify four common metric units of measurement: centimeters, grams, milliliters, and degrees Celsius. Know that 1000 millimeters equal 1 meter. Identify the boiling point of water, the freezing point of water, and the average body temperature. Record results on a bar graph. Measure temperatures on the Celsius scale. Identify some common tools used by scientists for measuring, such as a balance, a graduated cylinder, a metric ruler, and a thermometer. Measure volume in milliliters using a graduated cylinder. Demonstrate mastery of important knowledge and skills taught in this unit. Measure weight using a spring scale. Compare mass and weight. Know that a newton is a metric unit of weight.
Forces and Motion 1 Make It Move with Pushes and Pulls	SC4.1.10	Compare how objects move, both in and out of water. Describe the changes in an object's position, due to motion.
Forces and Motion 2 Measuring Pushes and Pulls	SC4.1.10	Measure the forces needed to pull objects across a smooth, flat surface using a spring scale. Measure the weight of objects using spring scale.
Forces and Motion 3 We've Got Friction		Know that friction is force that slows down or stops sliding objects. Demonstrate how the force of friction affects the motion of objects.
Forces and Motion 4 Groovy Gravity		State that gravity pulls objects straight down to the Earth. Know that gravity makes all objects fall at the same rate.

<p>Forces and Motion 7 Balancing Act</p>		<p>Demonstrate mastery of the knowledge and skills taught in this unit. Measure the forces needed to pull objects across a smooth, flat surface using a spring scale. Know that there is a force of friction whenever two surfaces move against one another. Know that friction is a force that slows down or stops sliding objects. Demonstrate how gravity affects all objects. Know that gravity makes all objects fall at the same rate.</p>
<p>Simple Machines 1 What Are Machines?</p>		<p>Define the scientific term work. Explain how machines make work easier. Identify different types of simple levers.</p>
<p>Simple Machines 2 Wheels and Axles</p>		<p>Identify wheels and axles. Demonstrate how a force gets transferred between a wheel and its axle. Identify different types of simple levers.</p>
<p>Simple Machines 3 Pulleys</p>		<p>Identify how a fixed pulley is used to lift a load. Identify the parts of a pulley. Identify different types of simple levers.</p>
<p>Simple Machines 4 Inclined Planes, Wedges, and Screws</p>		<p>Define a screw as a simple machine made of an inclined plane wrapped around a cylinder. Explain that it takes less force to pull load up an inclined plane than it does to lift the load to the same height. Explain that load must travel longer distance up an inclined plane than it would if it were lifted straight up to the same height.</p>
<p>Simple Machines 5 Machines Work Together</p>		<p>Identify common tools as simple or complex machines. Identify different types of simple levers. Identify the parts of a pulley. State that wedges can be used to lift, cut, or separate. Define the scientific term work. Identify how a moveable pulley is used to lift load. Explain how machines make work easier. Demonstrate how a force gets transferred between a wheel and its axle. Identify wheels and axles. Explain that it takes less force to pull a load up an inclined plane than it does to lift the load to the same height. Identify how a fixed pulley is used to lift a load. Define a screw as a simple machine made of an inclined plane wrapped around cylinder.</p>
<p>Magnetism The Force of Magnetism</p>	<p>SC4.1.9</p>	<p>Explain that magnets can cause some objects to move by exerting an invisible force.</p> <p>Recognize that magnets are strongest at the poles.</p> <p>Determine that objects made of iron and steel are attracted to magnets.</p> <p>Determine the relative strengths of various magnets.</p>

		Identify magnets by their common names.
Magnetism 2 Magnetic Poles and Fields	SC4.1.9	Demonstrate that magnets have two kinds of poles, and that similar poles repel and opposite poles attract. Explain that the Earth is a large magnet with magnetic poles and a magnetic field. Show the magnetic fields of different magnets by using iron filings.
Magnetism 3 Temporary Magnets	SC4.1.9	Explain that the molecules of an object made of iron or steel can be temporarily aligned to form a magnet.
Magnetism 5 Through Thick and Thin	SC4.1.9	Explain how to make a temporary magnet. Determine that objects made of iron and steel are attracted to magnets. Recognize that magnets are strongest at the poles. Demonstrate that magnets have two kinds of poles, and that similar poles repel and opposite poles attract. Explain that the Earth is a large magnet with magnetic poles and a magnetic field. Demonstrate mastery of the important knowledge and skills of this unit.
Sounds Around Us 1 Sounds All Around		Determine the sources of a variety of sounds.
Sounds Around Us 3 Sound Travels	SC4.1.9	Identify vibrating sources of sound.
Sounds Around Us 3 Sound Waves	SC4.1.9	Demonstrate that sound waves travel through solids, liquids, and gases.
Sounds Around Us 4 The Ears Hear	SC4.1.9	Identify ways that animals use their ears to survive. Label the parts of the ear.
Sounds Around Us 5 Exploring Pitch and Volume	SC4.1.9	Experiment to see what causes pitch and volume changes.
Sounds Around Us 6 Musical Sound	SC4.1.9	Differentiate between methods of changing volume and pitch on a stringed instrument. Demonstrate how to change the volume of a stringed instrument's sound.
Sounds Around Us 8 Biography: Alexander Graham Bell	SC4.3.1	Tell about the life and accomplishments of Alexander Graham Bell. Recognize that the sound of your voice is a result of your vocal cords vibrating. Demonstrate that sound waves travel through solids, liquids, and gases. Demonstrate how to change the volume of a stringed instrument's sound. Recognize that the sound of your voice is a result of your vocal cords vibrating. Identify vibrating sources of sound. Demonstrate mastery of the knowledge and skills taught in this unit. Differentiate between

		pitch and volume. Explain how sound is transmitted through the ear. Identify the source of natural and man-made sounds. Label the parts of the ear.
Sounds Around Us 9 1st Semester Assessment		Identify some common tools used by scientists for measuring, such as a balance, a graduated cylinder, a metric ruler, and a thermometer. Explain how sound is transmitted through the ear. Differentiate between methods of changing volume and pitch on stringed instrument. Explain how machines make work easier. Know that moving heavy objects requires more force than moving light objects. Define the scientific term work. State that magnets have poles—areas of greatest magnetic strength. Demonstrate that magnets have two kinds of poles, and that similar poles repel and opposite poles attract. Explain that sound is made by vibrating objects. Recognize that there are 1000mL in liter. Explain that it takes less force to pull load up an inclined plane than it does to lift the load to the same height. Know that 10 centimeters equal meter. Measure volume in milliliters using a graduated cylinder. Know that friction is a force that slows down or stops sliding objects. Identify different types of simple levers. Explain how to make a temporary magnet. Demonstrate mastery of the knowledge and skills taught in this unit.
The Human Body 1 Cells		Identify four different types of cells and their functions. Explain that all living things are made of cells. Recognize that cells can grow, die, and be replaced throughout your life.
The Human Body 3 What Happens to a Hamburger? Part 1		Recognize that the digestive system gets the energy your body uses to live and grow from food.
The Human Body 4 What Happens to a Hamburger? Part 2		Explain that the small intestine completes the breakdown of food into molecules that the body uses to make energy. Explain that the large intestine absorbs water from undigested food and gets rid of waste.
The Human Body 5 The Excretory System		Explain how the kidneys and bladder function as part of the excretory system to filter, store, and remove liquid waste from the blood.
The Human Body 6 My Plate		Demonstrate mastery of the important knowledge and skills of this unit. Name the six food groups in the food pyramid. Explain that the large intestine absorbs water from undigested food and gets rid of waste. Describe the functions of the mouth, the esophagus, and the stomach. Explain that the small intestine completes the breakdown of food into molecules that the body

		uses to make energy. Explain that all living things are made of cells. Compare the relative sizes of the small and large intestines. Identify the three main parts of the animal cell: cell membrane, nucleus, and cytoplasm. Recognize that the digestive system gets the energy your body uses to live and grow from food.
Rock Hounds 1 Journey to the Center of the Earth		Explain that the crust, mantle, and core are the three layers of the Earth. State that scientists who study the Earth are called geologists.
Rock Hounds Rock Collection		Sort and classify rocks according to their properties.
Rock Hounds 3 Marvelous Minerals		Recognize that minerals form in special shapes called crystals. Use "Mohs' Scale of Hardness" to test and identify minerals.
Rock Hounds 4 Igneous Rock		Identify magma as melted rock from the Earth's mantle or crust. Explain that igneous rock is made from cooled lava from a volcanic eruption.
Rock Hounds 5 Sedimentary Rock		State that sedimentary rocks form over long period of time. Explain that sedimentary rock is made from layers of sediment. Identify ways people use sedimentary rock.
Rock Hounds 6 Fossils Tell of Long Ago		Explain that fossil is plant, animal, or imprint of plant or animal that has turned to stone.
Rock Hounds 7 Metamorphic Rock		Explain that metamorphic rock is sedimentary or igneous rock that has been changed by heat and pressure. Compare igneous, sedimentary, and metamorphic rock by the processes that form them.
Rock Hounds 8 Biography: Florence Bascom	SC4.3.1	Explain that the crust, mantle, and core are the three layers of the Earth. Explain that magma is called lava when it reaches the Earth's surface. Explain that metamorphic rock is sedimentary or igneous rock that has been changed by heat and pressure. Compare igneous, sedimentary, and metamorphic rock by the processes that form them. Identify characteristics of the Earth's crust, mantle, and core. Explain that sedimentary rock is made from layers of sediment. Explain that fossils give us information about plants and animals that lived long ago and how the Earth has changed over time. Explain that igneous rock is made from cooled lava from a volcanic eruption. Explain that a fossil is a plant, animal, or imprint of a plant or animal that has turned to stone. Know that Florence Bascom is considered the first woman of geology. Map the locations of minerals in a model.

Weathering, Erosion, and Soil 1 What Is Soil?		State that soil is a mixture of minerals, humus, air, and water.
Weathering, Erosion, and Soil 2 Clay, Silt, and Sand		Explain that humus is made up of things that were once living, such as twigs, roots, and leaves, as well as dead insects and worms.
Weathering, Erosion, and Soil 3 How Are Soils Different?, Part 1		Explain that soils have different textures because they contain different amounts of clay, silt, and sand. Explain why different soils have different colors (for example, they are made of different minerals, they contain different amounts of humus or water).
Weathering, Erosion, and Soil 4 Weathered and Worn Down		Recognize that the mineral particles in soil (for example, sand, silt, and clay) are weathered rock. Describe weathering as the process that breaks down rocks into smaller pieces.
Weathering, Erosion, and Soil 5 Erosion		Explain that erosion can be caused by both water and wind. Describe erosion as the movement of soil and weathered rock from one place to another.
Weathering, Erosion, and Soil 6 Save Our Soil		State that unplanted soil erodes more easily than planted soil. Explain why conserving soil is important. Experiment to see if grass helps reduce erosion by trapping soil with its roots.
Weathering, Erosion, and Soil 7 How Are Soils Different?, Part 2		Conclude whether sand or loam soil grows healthier bean plants. Demonstrate mastery of the important knowledge and skills of this unit. Draw a bar graph that accurately depicts experimental results. Explain why different soils have different colors (for example, they are made of different minerals, they contain different amounts of humus or water). Compare the relative sizes of clay and sand. Describe erosion as the movement of soil and weathered rock from one place to another. Explain that humus is made up of things that were once living, such as twigs, roots, and leaves, as well as dead insects and worms. Describe weathering as the process that breaks down rocks into smaller pieces. State that soil is a mixture of minerals, humus, air, and water. Recognize that clay, silt, and sand are terms that describe mineral particles of different sizes.
Circle of Life, Plants Life Cycles	SC4.1.2	Put the plant life-cycle stages in the correct order. Explain that the series of stages through which a living thing passes during its lifetime is called its life cycle. Identify plant life-cycle stages: seed, seedling, flower, fruit.

Circle of Life, Plants Seed Stage: Roots and Gravity		State that one way plants reproduce is by making seeds that grow into new plants. Recognize that the force of gravity causes roots to grow downward. Identify plant life-cycle stages: seed, seedling, flower, fruit.
Circle of Life, Plants Seedling Stage: Light and Plants		Recognize that plants grow toward light. Recognize that seedlings, when they are mature, will look similar to their parent plants.
Circle of Life, Plants Fabulous Flowers		Identify the parts of flower: sepal, petal, stamen, pistil.
Circle of Life, Plants The Power of a Flower		State that fruit grows from pollinated flower. Recognize that pollination occurs when pollen from one flower's stamen contacts another flower's pistil.
Circle of Life, Plants Traveling Seeds		Identify ways in which seeds are dispersed (for example, by hitchhiking, by blowing in the wind, by gravity, and by being eaten by animals).
Circle of Life, Plants See How They Grow!		Demonstrate mastery of the important knowledge and skills of this unit. Formulate conclusions about how sunlight affects the growth of plants. Identify ways in which seeds are dispersed (for example, by hitchhiking, by blowing in the wind, by gravity, and by being eaten by animals). State that fruit grows from a pollinated flower. Identify plant life-cycle stages: seed, seedling, flower, fruit. Explain that the series of stages through which a living thing passes during its lifetime is called its life cycle. Identify the parts of a flower: sepal, petal, stamen, pistil. Recognize that pollination occurs when pollen from one flower's stamen contacts another flower's pistil. Recognize that plants grow toward light. Recognize that the force of gravity causes roots to grow downward.
1 Circle of Life, Animals 1 Animals Have Life Cycles, Too	SC4.1.2	Recognize both similarities and differences between plant and animal life cycles. Compare plant life cycle with an animal life cycle.
1 Circle of Life, Animals 2 Life Cycle of Insects, Part 1	SC4.1.2	Put the stages of an insect's life cycle in the correct order. Explain that a butterfly has a chrysalis during the pupa stage. State that a butterfly larva is also called a caterpillar.
1 Circle of Life, Animals 3 Life Cycle of Insects, Part 2		Recognize that insects molt as they grow. Recognize that metamorphosis is the transformation of an insect larva to an adult. Describe the larva stage of some insect life cycles as "wormlike."

1 Circle of Life, Animals 4 Life Cycle of Fish	SC4.1.2	Describe the stages in the life cycle of a fish (for example, that a fry is a young fish and that adult fish reproduce). Put the stages of fish's life cycle in the right order.
1 Circle of Life, Animals 5 Why Frogs Are Wet: Life Cycle of Amphibians	SC4.1.2	Describe the stages in the life cycle of a frog (for example, that a tadpole has gills and lives in the water and that an adult has four legs and can live both on land and in the water). Order the stages of a frog life cycle.
1 Circle of Life, Animals 6 Life Cycle of Reptiles	SC4.1.2	Put the stages of reptile's life cycle in the right order. Describe the stages in the life cycle of a reptile (for example, that a hatchling is a young reptile and that an adult reptile can reproduce).
1 Circle of Life, Animals 7 Life Cycle of Birds	SC4.1.2	Put the stages of bird's life cycle in the right order. Describe the different stages in the life cycle of a bird (for example, that a chick is a young bird, and adult birds reproduce).
1 Circle of Life, Animals 8 Life Cycle of Mammals	SC4.1.2	Describe the stages in the life cycle of a mammal (for example, that baby mammals are born live and look similar to their parents, and adults reproduce). Identify, in order, the stages of a human life cycle. Describe the larva stage of some insect life cycles as "wormlike."
1 Circle of Life, Animals 9 Life Spans		Put the stages of an insect's life cycle in the correct order. Recognize that metamorphosis is the transformation of an insect larva to an adult. Order the stages of frog life cycle. Put the stages of a reptile's life cycle in the right order. Put the stages of a fish's life cycle in the right order. Identify, in order, the stages of a human life cycle. Recognize both similarities and differences between plant and animal life cycles. Put the stages of a bird's life cycle in the right order. Demonstrate mastery of the important knowledge and skills of this unit.
1 Circle of Life, Animals 10 Semester Assessment		Compare igneous, sedimentary, and metamorphic rock by the processes that form them. Experiment to see if grass helps reduce erosion by trapping soil with its roots. Explain that all living things are made of cells. Recognize that plants grow toward light. Explain that fossils give us information about plants and animals that lived long ago and how the Earth has changed over time. Describe weathering as the process that breaks down rocks into smaller pieces. Identify plant life-cycle stages: seed, seedling, flower, fruit. Recognize that the digestive system gets the energy your body uses to live and grow from food. Explain that erosion can be caused by both water and wind. Identify the parts of a flower: sepal, petal, stamen, pistil. Recognize both similarities and

		<p>differences between plant and animal life cycles. Identify the mouth, esophagus, stomach, and intestines as parts of the digestive system. State that soil is a mixture of minerals, humus, air, and water. Identify ways in which seeds are dispersed (for example, by hitchhiking, by blowing in the wind, by gravity, and by being eaten by animals). Put the stages of a fish's life cycle in the right order. Describe the functions of the mouth, the esophagus, and the stomach. Explain that the crust, mantle, and core are the three layers of the Earth. Explain that sedimentary rock is made from layers of sediment. Explain that metamorphic rock is sedimentary or igneous rock that has been changed by heat and pressure. Recognize that metamorphosis is the transformation of an insect larva to an adult. Demonstrate mastery of important knowledge and skills in this semester.</p>
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