

# Wyoming Department of Education Required Virtual Education Course Syllabus

## Niobrara County School District # 1

Program Name	Wyoming Virtual Academy	Content Area	SC
Course ID	CALMS3996	Grade Level	2
Course Name	Science 2 Summit NG	# of Credits	
SCED Code		Curriculum Type	K12 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#	<a href="#">BENCHMARK (Standard/Indicator) Use the Standards and Benchmarks as Spreadsheets</a>
2-PS1-1	Plan and conduct an investigation to describe and classify different kinds of materials by their observable properties.
2-PS1-2	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.
2-PS1-3	Make observations to construct an evidence-based account of how an object made of a small set of pieces can be disassembled and made into a new object.
2-PS1-4	Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.
2-LS2-1	Plan and conduct an investigation to determine if plants need sunlight and water to grow.
2-LS2-2	Develop a simple model that mimics the function of an animal in dispersing seeds or pollinating plants.

2-LS4-1	Make observations of plants and animals to compare the diversity of life in different habitats.
2-ESS1-1	Use information from several sources to provide evidence that Earth events can occur quickly or slowly.
2-ESS2-1	Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.
2-ESS2-2	Develop a model to represent the shapes and kinds of land and bodies of water in an area.
2-ESS2-3	Obtain information to identify where water is found on Earth and that it can be solid, liquid, or gas.
K-2-ETS1-1	Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
K-2-ETS1-2	Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
K-2-ETS1-3	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
1-PS4-1	Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.
1-LS1-2	Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.

1 Metrics and Measurements 1 Meet the Metrics		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.
1 Metrics and Measurements 2 Why Does a Meter Matter?		Know that 1000 millimeters equal 1 meter. Know that meters, centimeters, and millimeters are units of length.
1 Metrics and Measurements 3 Temperature Scales		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.

1 Metrics and Measurements 4 Let's Use a Liter		Recognize that there are 1000mL in a liter.
1 Metrics and Measurements 5 The Scientific Method		Identify the steps in the scientific method.
1 Metrics and Measurements 6 Let's Measure Mass		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.
1 Metrics and Measurements 7 Spring into Action	2-PS1-4, K-2-ETS1-1 K-2-ETS1-2 K-2-ETS1-3	Know that 100 centimeters equal 1 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.
2 Forces and Motion 1 Make It Move with Pushes and Pulls		Compare how objects move, both in and out of water. Describe the changes in an object's position, due to motion.
2 Forces and Motion 2 Measuring Pushes and Pulls		Measure the forces needed to pull objects across a smooth, flat surface using a spring scale. Measure the weight of objects using a spring scale.
2 Forces and Motion 3 We've Got Friction		Know that friction is a force that slows down or stops sliding objects. Demonstrate how the force of friction affects the motion of objects.
2 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.
2 Forces and Motion 7 Balancing Act	2-PS1-1 2-PS1-2	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.
3 Simple Machines 1 What Are Machines?		Define the scientific term work. Explain how machines make work easier. Identify different types of simple levers.
3 Simple Machines 2 Wheels and Axles		Identify wheels and axles. Demonstrate how a force gets transferred between a wheel and its axle. Identify different types of simple levers.
3 Simple Machines 3 Pulleys		Identify how a fixed pulley is used to lift a load. Identify the parts of a pulley. Identify different types of simple levers.
3 Simple Machines 4 Inclined Planes, Wedges, and Screws		Define a screw as a simple machine made of an inclined plane wrapped around a cylinder. 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. Explain that a load must travel a longer distance up an inclined plane than it would if it were lifted straight up to the same height.
3 Simple Machines 5 Machines Work Together	2-PS1-3, K-2-ETS1-1 K-2-ETS1-2 K-2-ETS-1-3	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 a 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 a cylinder.
4 Magnetism 1 The Force of Magnetism		Explain that magnets can cause some objects to move by exerting an invisible force.  Recognize that magnets are strongest at the poles.  Determine that objects made of iron and steel are attracted to magnets.  Determine the relative strengths of various magnets.  Identify magnets by their common names.

4 Magnetism 2 Magnetic Poles and Fields		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.
4 Magnetism 3 Temporary Magnets		Explain that the molecules of an object made of iron or steel can be temporarily aligned to form a magnet.
4 Magnetism 5 Through Thick and Thin	K-PS2-1 K-PS2-2	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.
5 Sounds Around Us 1 Sounds All Around		Determine the sources of a variety of sounds.
5 Sounds Around Us 3 Sound Travels		identify vibrating sources of sound.
5 Sounds Around Us 3 Sound Waves		Demonstrate that sound waves travel through solids, liquids, and gases.
5 Sounds Around Us 4 The Ears Hear		Identify ways that animals use their ears to survive. Label the parts of the ear.
5 Sounds Around Us 5 Exploring Pitch and Volume		Experiment to see what causes pitch and volume changes.
5 Sounds Around Us 6 Musical Sound		Differentiate between methods of changing volume and pitch on a stringed instrument. Demonstrate how to change the volume of a stringed instrument's sound.
5 Sounds Around Us 8 Biography: Alexander Graham Bell	1-PS4-1, K-2-ETS1-1 K-2-ETS1-2 K-2-ETS-1-3	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.
5 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 a 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 a liter. 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. Know that 100 centimeters equal 1 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.
6 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.
6 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.
6 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.
6 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.
6 The Human Body 6 My Plate	1-LS1-2, 2-LS4-1,	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

		<p>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.</p>
7 Rock Hounds 1 Journey to the Center of the Earth		<p>Explain that the crust, mantle, and core are the three layers of the Earth. State that scientists who study the Earth are called geologists.</p>
7 Rock Hounds 2 Rock Collection		<p>Sort and classify rocks according to their properties.</p>
7 Rock Hounds 3 Marvelous Minerals		<p>Recognize that minerals form in special shapes called crystals. Use "Mohs' Scale of Hardness" to test and identify minerals.</p>
7 Rock Hounds 4 Igneous Rock		<p>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.</p>
7 Rock Hounds 5 Sedimentary Rock		<p>State that sedimentary rocks form over a long period of time. Explain that sedimentary rock is made from layers of sediment. Identify ways people use sedimentary rock.</p>
7 Rock Hounds 6 Fossils Tell of Long Ago		<p>Explain that a fossil is a plant, animal, or imprint of a plant or animal that has turned to stone.</p>
7 Rock Hounds 7 Metamorphic Rock		<p>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.</p>
7 Rock Hounds 8 Biography: Florence Bascom	2-ESS1-1,	<p>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,</p>

		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.
8 Weathering, Erosion, and Soil 1 What Is Soil?		State that soil is a mixture of minerals, humus, air, and water.
8 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.
8 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).
8 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.
8 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.
8 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.
8 Weathering, Erosion, and Soil 7 How Are Soils Different?, Part 2	2-ESS1-1, 2-ESS2-1, 2-ESS2-3 2-ESS2-2, K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3	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.



9 Circle of Life, Plants 1 Life Cycles		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.
9 Circle of Life, Plants 2 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.
9 Circle of Life, Plants 3 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.
9 Circle of Life, Plants 4 Fabulous Flowers		Identify the parts of a flower: sepal, petal, stamen, pistil.
9 Circle of Life, Plants 5 The Power of a Flower		State that fruit grows from a pollinated flower. Recognize that pollination occurs when pollen from one flower's stamen contacts another flower's pistil.
9 Circle of Life, Plants 6 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).
9 Circle of Life, Plants 8 See How They Grow!	2-LS2-1 2-LS2-2 2-LS4-1	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.
10 Circle of Life, Animals 1 Animals Have Life Cycles, Too		Recognize both similarities and differences between plant and animal life cycles. Compare a plant life cycle with an animal life cycle.
10 Circle of Life, Animals 2 Life Cycle of Insects, Part 1		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.

10 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."
10 Circle of Life, Animals 4 Life Cycle of Fish		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 a fish's life cycle in the right order.
10 Circle of Life, Animals 5 Why Frogs Are Wet: Life Cycle of Amphibians		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.
10 Circle of Life, Animals 6 Life Cycle of Reptiles		Put the stages of a 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).
10 Circle of Life, Animals 7 Life Cycle of Birds		Put the stages of a 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).
10 Circle of Life, Animals 8 Life Cycle of Mammals		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."
10 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 a 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.
10 Circle of Life, Animals 10 Semester Assessment	2-LS2-1 2-LS2-2 2-LS4-1	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

		<p>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 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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