Wyoming Department of Education Required Virtual Education Course Syllabus

Niobrara County School District # 1

Program Name	Wyoming Virtual Academy	Content Area	SC
Course ID	CALMS3989	Grade Level	1
Course Name	Science 1 Summit NG	# of Credits	
SCED Code		Curriculum Type	K12 Inc

COURSE DESCRIPTION

Students learn to perform experiments and record observations, and understand how scientists see the natural world. They germinate seeds to observe plant growth, and make a weathervane. Students will explore topics such as:

- Matter—states of matter; mixtures and solutions
- Weather—cloud formation; the water cycle
- Animal Classification and Adaptation—insects; amphibians and reptiles; birds; mammals
- Habitats—forests, deserts, rain forests, grasslands, and more; naturalist John Muir and conservation
- Oceans—waves and currents; coasts; coral reefs and kelp forests; oceanographer Jacques Cousteau
- Plants—germination, functions of roots, stems flowers, chlorophyll, and more
- Human Body—major systems; Elizabeth Blackwell, the first woman doctor
- Light—how light travels; reflections; inventor Thomas Edison

WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK_(Standard/Indicator) Use the Standards and Benchmarks as Spreadsheets
1-PS4-1	Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.
1-PS4-2	Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated.
1-PS4-3	Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.
1-PS4-4	Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance.

1-LS1-1	Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs.
1-LS1-2	Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.
1-LS3-1	Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents.
1-ESS1-1	Use observations of the sun, moon, and stars to describe patterns that can be predicted.
1-ESS1-2	Make observations at different times of year to relate the amount of daylight to the time of year.
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-ETS-1-3	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.
K-ESS2-1	Use and share observations of local weather conditions to describe patterns over time.
K-ESS3-2	Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather.
2-LS2-1	Plan and conduct an investigation to determine if plants need sunlight and water to grow.

UNIT OUTLINE	STANDARD#	OUTCOMES OBJECTIVES/STUDENT CENTERED GOALS
1 Acting Like a Scientist 1 Take Me to Your Ruler		Measure lengths in nonstandard units. Measure lengths in centimeters Recognize the importance of using a standard unit of measurement for scientific data. Explore concepts to be addressed during the year in Science 1.

1 Acting Like a Scientist 2 Balancing Act		Recognize that a gram is a standard unit of measurement Measure the mass of various objects, in grams, with a double pan balance. Arrange objects of different mass, from the least mass to the greatest mass Demonstrate that size and mass are not always related. Measure mass, in grams, using a double-pan balance. Explore concepts to be addressed during the year in Science 1.
1 Acting Like a Scientist 3 Pour It		Use a graduated cylinder to measure the volume of water in milliliters. Compare the capacities of containers by measuring their volumes. Recognize that mL is the symbol for milliliters.
1 Acting Like a Scientist 4 Read a Thermometer		Measure temperature in degrees Celsius. Know that a thermometer is a tool for measuring how hot or cold something is. Explain that hotter objects have higher temperatures than colder objects.
1 Acting Like a Scientist 5 Thinking Like a Scientist		Explain that scientists use the scientific method to answer questions. Recognize steps of the scientific process.
1 Acting Like a Scientist 6 The Zookeeper	K-2-ETS1-1, K-2-ETS1-2	Know that a thermometer is a tool for measuring how hot or cold something is. Measure lengths in centimeters Explain that hotter objects have higher temperatures than colder objects. Demonstrate mastery of the important knowledge and skills taught in this unit. Measure lengths in nonstandard units. Use a graduated cylinder to measure the volume of water in milliliters. Interpret results from a bar graph. Compile data in a table. Draw a bar graph using data from the table.
2 Matterland 1 States of Matter		Explain that everything is made of matter. Explain that solids hold their own shape. Explain that liquids flow freely and take the shape of their containers. Name all three states of matter: solid, liquid, and gas.
2 Matterland 2 Gases Matter		Demonstrate that gases have mass. Explain that gases have no definite shape and fill up the space in which they are contained. Identify the three states of matter.
2 Matterland 3 Solids Melt, Liquids Freeze		Demonstrate that liquids change to solids when cooled. Demonstrate that solids change to liquids when heated. Explain that ice and water are the same type of matter.
2 Matterland 4 From Liquid to Gas and Back Again		Explain that ice, water, and water vapor are the same type of matter. Explain that water vapor is water in a gaseous state. State that heated water changes to water vapor. Explain, using water as a model, that liquid changes to gases when heated. Explain,

		using water as a model, that gases can change back to liquids when cooled.
2 Matterland 5 Molecules on the Move		State that matter is made up of molecules. Recognize that molecules move faster when they are warm and more slowly when they are cool Using water as a model, act out the relative motion of molecules in solids, liquids, and gases.
2 Matterland 8 What's the Solution?	K-2-ETS1-1, K-2-ETS1-2, K-2-ETS1-3, 2-PS1-4	Name all three states of matter: solid, liquid, and gas. Demonstrate that gases have mass. Demonstrate that solids change to liquids when heated. Explain that water vapor is water in a gaseous state. Explain, using water as a model, that liquid changes to gases when heated. State that matter is made up of molecules. Recognize that molecules move faster when they are warm and more slowly when they are cool Explain that ice, water, and water vapor are the same type of matter. Explain that everything is made of matter. Explain that solids hold their own shape. Explain that liquids flow freely and take the shape of their containers. Demonstrate mastery of the important knowledge and skills taught in this unit.
3 Everyday Weather 1 The Weather Forecast		State that the weather changes every day. Tell that meteorologists use satellites to help make weather forecasts. Define a meteorologist as a person who studies the weather. Record weather conditions. Record weather conditions.
3 Everyday Weather 2 Seasons		Explain that the seasons change because the axis of the Earth is tilted, and the sun warms the Earth differently at different times during the year. Recognize the general weather conditions associated with each of the four seasons. State that the Earth spins around completely on its axis in one day. Tell that the Earth orbits the sun, making one complete orbit in one year.
3 Everyday Weather 3 Wind Direction and Wind Speed		Explain that an anemometer measures wind speed and that a weather vane measures wind direction. Construct a weather vane to determine wind direction. Record weather conditions. Construct an anemometer to measure wind speed
3 Everyday Weather 4 The Rain Catcher		Construct a rain gauge. Record weather conditions. Explain that a rain gauge is used to measure the amount of rainfall.
3 Everyday Weather 5 Water in the Air		Describe evaporation as the process of a liquid changing into a gas. State that condensation is the process of a gas changing into a liquid. Measure humidity using a glass of ice cubes. Explain that clouds are made of water droplets. Explain that rains happens

		when droplets in the clouds become large and heavy enough to fall to the ground.
3 Everyday Weather 6 Cotton Ball Clouds		Identify the four types of clouds: stratus, cumulus, cirrus, and cumulonimbus. State the common weather conditions associated with each cloud type.
3 Everyday Weather 7 The Water Cycle		Sequence the steps of the water cycle. Tell how hail is formed in a cloud. Name the four main types of precipitation.
3 Everyday Weather 8 Drifting Snowflakes		Demonstrate how large snowflakes fall more slowly than sleet. Explain that the depth of snow is greater before it melts than after it melts. State that snowflakes usually have six sides or points. Tell how to measure snowfall depth.
3 Everyday Weather 9 Flash, Crash, Rumble, and Roll		Identify ways to stay safe in a lightning storm. Know that electricity in thunderclouds can make a flash of lightning. Demonstrate how lightning and thunder are made.
3 Everyday Weather 10 My Weather Chart	K-ESS2-1, K-ESS3-2, 1-PS4-1	Explain that clouds are made of water droplets. Name the four main types of precipitation. Explain that an anemometer measures wind speed and that a weather vane measures wind direction. Explain that a rain gauge is used to measure the amount of rainfall. State the common weather conditions associated with each cloud type. Define a meteorologist as a person who studies the weather. State that the Earth spins around completely on its axis in one day. Tell that the Earth orbits the sun, making one complete orbit in one year. Recognize the general weather conditions associated with each of the four seasons. Identify the four types of clouds: stratus, cumulus, cirrus, and cumulonimbus. Sequence the steps of the water cycle--know that water evaporates from the surface of the Earth, rises and condenses to form clouds, and returns to Earth as precipitation. State that the weather changes every day. Demonstrate mastery of the important knowledge and skills taught in this unit. Sequence the steps of the water cycle. Know that electricity in thunderclouds can make a flash of lightning. Interpret weather chart observations.
4 Animal Classification 1 Insects and Spiders		Identify the main characteristics of insects and spiders. Explain the differences between an insect and a spider.
4 Animal Classification 2 Fish		Identify and explain the main characteristics of fish and their functions. Recognize fish as a group of animals.

4 Animal Classification 3 Reptiles and Amphibians		Identify the main characteristics of reptiles. Recognize the difference between amphibians and reptiles. Identify the main characteristics of amphibians.
4 Animal Classification 4 Birds		Recognize birds as a group of animals. Identify and explain the functions of the main characteristics of birds.
4 Animal Classification 5 Mammals	1-LS1-1, 1-LS1-2, 1-LS3-1	Demonstrate mastery of the important knowledge and skills taught in this unit. Identify the main characteristics of mammals. Recognize mammals as a group of animals. Identify the main characteristics of insects and spiders. Identify and explain the main characteristics of fish and their functions. Recognize fish as a group of animals. Identify and explain the functions of the main characteristics of birds. Recognize the difference between amphibians and reptiles. Identify the main characteristics of amphibians. Identify the main characteristics of reptiles. Recognize birds as a group of animals.
6 Light Up Your Life 1 Light in Our Lives		Explain that smooth surfaces reflect light better than rough surfaces. Explain that light can reflect off objects. Identify sources of light. Demonstrate that light can be blocked.
6 Light Up Your Life 2 A Beam of Light		Explain how light reflects. State that light travels in a straight path.
6 Light Up Your Life 3 See Through It		Classify objects according to how much light they transmit. Define transparent, translucent, and opaque. Explain how the thickness of an object affects its translucency. Identify transparent, translucent, and opaque materials.
6 Light Up Your Life 4 Dancing in the Dark		Describe how the sizes and shapes of shadows can change. Explain how a shadow is made.
6 Light Up Your Life 5 Make a Shadow Clock	1-PS4-2, 1-PS4-3, 1-PS4-4	Construct a shadow clock by using common household items and record shadows over a period of time. Demonstrate that the length of a shadow changes throughout the day.
6 Light Up Your Life 6 Kaleidoscopes		Explain how light is reflected in a kaleidoscope. Demonstrate how two small mirrors can produce multiple images.
6 Light Up Your Life 7 Biography: Thomas Edison	1-PS4-2, 1-PS4-3, 1-PS4-4, 1-ESS1-1, 1-ESS1-2	Explain that smooth surfaces reflect better than rough surfaces. Demonstrate that the length of a shadow changes throughout the day. Demonstrate that the length of a shadow changes throughout the day. Identify Thomas Edison as the inventor of many things, including the light bulb, the phonograph, and the motion picture. Demonstrate how the thickness of a material affects its translucency. Explain how light is reflected in a kaleidoscope. Identify sources of light. State that light travels in a

		straight line. Demonstrate that light can reflect off objects. Identify transparent, translucent, and opaque materials. Explain how a shadow is made.
7 Our Green World 1 From Seed to Seedling		Describe what happens when a seed germinates. State that plants grow from seeds and that this starts with a process called germination. Tell what plants need in order to live and grow.
7 Our Green World 2 What's Inside a Seed?		Identify the three main parts of a seed: cotyledons, seed coat, and embryo. State that the cotyledons provide food for the baby plant inside the seed. Record seed germination observations.
7 Our Green World 3 Rootin' Tootin' Roots		Describe the basic functions of roots in plants. Differentiate between fibrous roots and taproots. Record seed germination observations. Record seed germination observations.
7 Our Green World 4 Lovely Leaves		Record seed germination observations. Explain that chlorophyll is a green substance in plants that helps them make their own food from sunlight. Identify two parts of a leaf: petiole and vein. Describe the function of leaves. Record seed germination observations.
7 Our Green World 5 Super Strong Stems, Part 1		Record seed germination observations. Differentiate between soft and green stems and hard, woody stems. Explain that a stem's functions are to carry water to the leaves and to hold the plant and its leaves up toward the sun. Record seed germination observations.
7 Our Green World 6 Super Strong Stems, Part 2		Record seed germination observations and draw accurate conclusions from the germination experiment. List two functions of stems: they support the plant and carry water and nutrients to its leaves. Identify structures that carry water and nutrients throughout the plant as xylem.
7 Our Green World 7 Flowers and Fruit		State that fruits come from flowers. Identify foods we eat as fruits and seeds. Explain that fruits contain seeds.
7 Our Green World 8 Bulbs	1-LS1-2, 1-LS1-2, 1-LS3-1	Recognize that a bulb is a type of plant that can grow without seeds. Demonstrate mastery of the important knowledge and skills of this unit. Identify parts of a bulb. Tell what plants need in order to live and grow. Identify the three main parts of a seed: cotyledons, seed coat, and embryo. Explain that fruits contain seeds. Describe the basic functions of roots in plants. Explain that a stem's functions are to carry water to the leaves and to hold the plant and its leaves up toward the sun. Identify foods we eat as fruits and seeds. State that the cotyledons provide food for the baby plant inside the seed. State that fruits come from flowers.

		Describe what happens when a seed germinates. Describe the function of leaves. Identify structures that carry water and nutrients throughout the plant as xylem.
8 Habitats 1 Introduction to Habitats		Describe a habitat as a place where plants and animals live. Recognize that there are many different kinds of habitats, each with different types of plants and animals.
8 Habitats 2 Forest Habitat		Recognize animals and plants that live in the forest. Describe the forest habitat as having different layers where different types of forest animals and plants live.
8 Habitats 3 Desert Habitat		Explain how some desert plants and animals have found ways to live in a hot, dry desert. Recognize plants and animals that live in a sandy desert. Recognize the characteristics of a desert habitat.
8 Habitats 4 Polar Habitat		Explain that blubber helps animals that live in cold habitats stay warm. Identify plants and animals that live in the Arctic. State that polar habitats are near the Earth's North and South Poles. Recognize characteristics of the polar habitats.
8 Habitats 5 Grasslands Habitat		Identify some plants and animals that live in the grasslands habitat. Differentiate between grazers and predators. Identify characteristics of the grasslands habitat. Measure plant growth and record data.
8 Habitats 6 Rain Forest Habitat		Recognize that the rain forest has different layers. Give an example of a product made from rain forest plants. Recognize characteristics of a rain forest.
8 Habitats 7 Wetlands Habitat		Identify some animals and plants that live in the wetlands habitat. Recognize characteristics of the wetlands habitat. Make a model to show how the wetlands help clean the Earth's water.
8 Habitats 8 Life Underground		Explain that living underground provides protection from hot and cold weather. Explain that in different habitats, some animals live underground. Identify some animals that live underground.
8 Habitats 9 Biography: John Muir		Tell that John Muir was a conservationist and writer who worked to preserve wilderness. Name different habitats that are protected by the National Park Service in the United States.
8 Habitats 10 Endangered Spaces	1-LS1-2, 1-LS1-2, 1-LS3-1, K-2-ETS1-1	Demonstrate mastery of the important knowledge and skills of this unit. Show how constructing a town can reduce the amount of space available for plants and animals. Describe a habitat as a place where plants and animals live. Tell that John Muir was a conservationist and writer who worked to preserve wilderness. Explain that in different habitats, some animals live underground.

		Recognize animals and plants that live in the forest. Recognize the characteristics of a desert habitat. Recognize characteristics of a rain forest. Identify characteristics of the grasslands habitat. Recognize characteristics of the polar habitats.
9 Oceans and Undersea Life 1 Ocean Waves and Currents		Recognize that light winds form small waves, and strong winds form large waves. State that the Earth's oceans contain saltwater. State that ocean water is always in motion.
9 Oceans and Undersea Life 2 Coasts: Where the Ocean Meets the Land		Define a coast as the place where land and ocean meet. Describe tides as the rise and fall of the ocean. Recognize that animals and plants that live in tide pools depend on tides to survive.
9 Oceans and Undersea Life 3 Drifters, Swimmers, and Crawlers		Recognize that many animals drift with the moving ocean. Describe some of the different ways animals move around the ocean (for example, drifting, crawling, and swimming).
9 Oceans and Undersea Life 5 The Kelp Forest		Explain that kelp is a type of plant that grows only in the ocean. Recognize that a kelp forest has layers.
9 Oceans and Undersea Life 6 The Coral Reef		Explain that corals use tentacles to catch food. Recognize that corals are animals that make up coral reefs.
9 Oceans and Undersea Life 7 The Deep Ocean		Recognize that most of the ocean is dark. Compare the formations on the bottom of the ocean with familiar landforms. State that animals live at all depths of the ocean.
9 Oceans and Undersea Life 8 Biography: Jacques Cousteau	1-LS1-2, 1-LS1-2, 1-LS3-1, K-2-ETS1-1	Demonstrate mastery of the important knowledge and skills of this unit. Explain that Jacques Cousteau was an important oceanographer. Recognize that many animals drift with the moving ocean. Recognize that most of the ocean is dark. Recognize that light winds form small waves, and strong winds form large waves. State that the Earth's oceans contain saltwater. Define a coast as the place where land and ocean meet. Recognize that corals are animals that make up coral reefs. State that animals live at all depths of the ocean. Explain that kelp is a type of plant that grows only in the ocean. Compare the formations on the bottom of the ocean with familiar landforms.
10 The Human Body 1 The Skeletal and Muscular Systems		Explain that bones protect and support our bodies. State that muscles are attached to bones and make our bodies move.

10 The Human Body 2 The Digestive System		Identify the mouth, esophagus, stomach, and intestines as parts of the digestive system. Recognize how the mouth, esophagus, stomach, and intestines function as part of the digestive process.
10 The Human Body 3 The Circulatory and Respiratory Systems		State that when we breathe, we take air into our lungs, and we must do so to stay alive. Explain that the heart pumps blood to all parts of the body through blood vessels.
10 The Human Body 4 The Nervous System		Explain that the nervous system is made up of the brain, the spinal cord, and the nerves. State that your brain controls your entire body and allows you to think, remember, and feel.
10 The Human Body 5 Biography: Elizabeth Blackwell	1-LS1-2	State that muscles are attached to bones and make our bodies move. State that when we breathe, we take air into our lungs, and we must do so to stay alive. Recognize how the mouth, esophagus, stomach, and intestines function as part of the digestive process. Identify the mouth, esophagus, stomach, and intestines as parts of the digestive system. Explain that the heart pumps blood to all parts of the body through blood vessels. State that your brain controls your entire body and allows you to think, remember, and feel. Explain that the nervous system is made up of the brain, the spinal cord, and the nerves. Demonstrate mastery of the important knowledge and skills of this unit. Explain that bones protect and support our bodies. Explain how washing your hands can reduce the spread of germs. State that Elizabeth Blackwell was the first woman doctor.