

Wyoming Department of Education Required Virtual Education Course Syllabus

BIG HORN COUNTY SCHOOL DISTRICT #1

Program Name	WYCA	Content Area	Science
Course ID	CAEL76433	Grade Level	5
Course Name	Science 5 A	# of Credits	0.5
SCED Code	NoCourseSCED	Curriculum Type	Connections Academy

COURSE DESCRIPTION

Science is an ongoing process that constantly renders new discoveries! In this first semester course, the student will be sharpening his investigative skills and expanding upon his existing knowledge in order to make his own new discoveries. The McGraw-Hill textbook, Science: A Closer Look, and the science kit are the primary resources for the course. The opening unit explores the role of scientists and the scientific method. The life science units explore cells and heredity. The Earth science units provide an opportunity for the student to design experiments to investigate Earth's composition and the factors that affect its composition.

The lessons in this course are designed to accommodate many learning styles, and to provide a variety of opportunities for the entire family to participate in the student's education. Some lessons, or groups of lessons, in each unit are activity-centered, which allow the student to engage the new concepts he encounters through exploration and discovery; others are more traditional, requiring the student to read, research, and reflect on the underlying theory.

WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK
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.
5-PS2-1	Support an argument that the gravitational force exerted by Earth on objects is directed down.
5-LS2-1	Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
5-ESS2-1	Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
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.

SCOPE AND SEQUENCE

UNIT OUTLINE	STANDARD#	OUTCOMES
<p>Unit 1: Properties of Matter</p> <p>In this unit, your student will learn about matter and models. Matter is made up of particles too small to be seen, and it takes the form of solids, liquids, or gases. All matter is made up of atoms. Your student will learn about the basic structure of an atom, and how atoms combine to form molecules and compounds. By exploring different properties of matter, your student will discover how a matter's properties are unique and can be used to identify the substance. Your student will also learn that two properties of matter are the temperatures at which that substance can be converted to from liquid to solid and liquid to gas.</p>	5-PS1-1, 5-PS1-3	<ul style="list-style-type: none"> • Demonstrate through modeling that matter is made up of particles too small to be seen. • Describe atoms and explain that atoms can form compounds such as water. • Make observations and measurements, including mass, volume, conductivity and magnetism to identify materials based on their properties. • Compare the freezing point and boiling points of two substances.

<p>Unit 2: Physical and Chemical Change</p> <p>In this unit, your student will discover that a solution is a kind of mixture in which the particles of matter are evenly distributed. Mixtures and solutions are a physical change of matter (i.e., The essential properties of the original substances are retained.). Because the essential properties of the original substances are retained, understanding what these properties are can guide you in separating the mixture. Your student will also learn that when a chemical change occurs, new substances are formed with new properties, which is not true of physical changes. There are clues, such as changes in temperature, to recognizing that a chemical change has taken place.</p>	<p>5-PS1-2, 5-PS1-4</p>	<ul style="list-style-type: none"> • Recognize that mixtures and solutions represent physical changes and that some of the properties of the mixed substances are retained. • Using understanding of properties of substances mixed, separate a mixture • Differentiate between physical and chemical change by conducting investigations and examining the properties of resultant substances. • Use measurements and observations to support an argument that matter is conserved when state of matter is changed, or when substances are mixed
<p>Unit 3: Gravity and Friction</p> <p>In this unit, your student will learn about the force of gravity. Your student will explore how gravity affects motion, and you will learn the concept of free fall. Your student will also learn about friction as a force that opposes motion and releases heat energy. In an engineering design challenge, your student will design and build catapults. As part of the engineering design process, your student will plan, create, test, and modify your designs to produce a catapult that best meets your criteria.</p>	<p>5-PS2-1, 3-5-ETS1-1, 3-5-ETS1-2, 3-5-ETS1-3</p>	<ul style="list-style-type: none"> • Interpret investigations to support an argument that Earth's gravity is a force exerted on objects near the Earth's surface, and that this force pulls an object towards the Earth's center. • Explain that friction is a force that affects motion, and releases heat energy. • Define a simple design problem concerning gravity and motion, and address constraints on materials, time or cost.
<p>Unit 4: Food Webs and Cycles of Matter</p> <p>In this unit, your student will learn how matter cycles through a food web. Your student will also learn about how the organisms in a food web are related. She will examine the symbiotic relationships between organisms. She will also discuss with her peers the ways in which a single change in a food web can affect the balance of an ecosystem.</p>	<p>5-LS2-1, 5-ESS2-1</p>	<ul style="list-style-type: none"> • Identify relationships between organisms in food chains and webs from different ecosystems. • Explain how a change in a food chain or food web may affect the balance of an ecosystem. • Explain relationships between organisms in which both organisms benefit, or only one benefits. • Create and explain graphic models of the carbon and nitrogen cycles that include the role of producers, consumers, and decomposers.