Wyoming Department of Education Required Virtual Education Course Syllabus

BIG HORN COUNTY SCHOOL DISTRICT #1

Program Name	WYCA	Content Area	Science
Course ID	CASC80404	Grade Level	9, 10, 11, 12
Course Name	Environmental Science A	# of Credits	0.5
SCED Code	03003G0.5012	Curriculum Type	Connections Academy

COURSE DESCRIPTION

This is the first of two courses that comprise Environmental Science. This course offers the student an opportunity to gain an understanding of the concepts fundamental to environmental science. These concepts are keys that will help unlock our abilities to safeguard resources, manage waste, reduce pollution, protect the food chain, adapt to changing fuel needs, and champion our planet on all levels – from the conscientious management of the smallest household to the protection of the largest biospheres.

WYOMING CONTENT AND PERFORMANCE STANDARDS

STANDARD#	BENCHMARK
HS-LS1-2	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multi-cellular organisms.
HS-LS1-5	Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.
HS-LS2-2	Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.
HS-LS2-4	Use mathematical representations to support claims for the cycling of matter and flow of energy among organisms in an ecosystem.
HS-LS2-5	Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.
HS-LS2-6	Evaluate the claims, evidence, and reasoning that the complex biotic and abiotic interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a modified ecosystem.
HS-LS2-7	Evaluate and assess impacts on the environment and biodiversity in order to refine or design a solution for detrimental impacts or enhancement for positive impacts.
HS-LS3-3	Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.
HS-LS4-5	Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
HS-LS4-6	Create and/or use a simulation to evaluate the impacts of human activity on biodiversity.
HS-ESS2-1	Develop a model to illustrate how Earth's internal and surface processes operate at different spatial and temporal scales to form continental and ocean-floor features.
HS-ESS2-2	Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems.
HS-ESS2-3	Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection.
HS-ESS2-6	Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere.
HS-ESS2-7	Construct an argument based on evidence about the simultaneous coevolution of Earth's systems and life on Earth.
HS-ESS3-3	Use computational tools to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
HS-ESS3-5	Analyze data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impact s to Earth systems.
HS-ESS3-6	Use the results of a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.

SCOPE AND SEQUENCE

UNIT OUTLINE	STANDARD#	OUTCOMES
Unit 1: The Methods and Nature of Environmental Science In this opening unit you will learn about the job of an environmentalist, review the scientific method, and explore how organisms are classified.	HS-LS1-2, HS-LS2-2, HS-LS2-7, HS-LS3-3, HS-LS4-5, HS-LS4-6, HS-ESS2-1, HS-ESS2-3, HS-ESS2-7, HS-ESS3-3, HS-ESS3-6	•Consider what makes up the environment •Learn the main "factors" that are needed to understand the environment in a logical manner •Realize the importance of the human factor on the environment •Learn one method of scientific problem-solving •Discover the steps of the scientific method •Experiment with the scientific method •Learn about the many types of specific specialists •Identify which scientists work in various environments •Explore how different civilizations have recorded the environments around them through the centuries •Learn how environmental scientists record their observations •Discover ways that you can record information about your own environment •Discover the challenges scientists face when emergencies occur •Realize the effects of accidental contamination on the environment •Define and differentiate abiotic and biotic •Learn the basic differences between biotic and abiotic objects

		Study the divisions of the Earth and their locations See how each division contributes to the environment Discover the way life is organized from the tiniest parts of an organism to the largest forms of life Explore the importance of listing and classifying organisms Gain a better understanding of the differences between population and community Learn the names of various groups of animals Explore how life forms adapt to their surroundings Discover how diverse organisms can be Learn about Charles Darwin and his theory of natural selection
Unit 2: Earth's Processes Several natural processes and cycles affect organisms that inhabit the Earth. In this unit, you will learn about such phenomena as you analyze the water and carbon cycles, examine the greenhouse effect, and explore causes of air, water, and food chain pollution.	HS-LS1-5, HS-LS2-4, HS-LS2-5, HS-LS2-6, HS-ESS2-2, HS-ESS2-6, HS-ESS3-5, HS-ESS3-6	•Explore the differences between domestic and wild plants and animals •Discover how domestication has improved the way humans live •Consider the concept of selective breeding •Learn about the delicate balance between organisms and their surroundings •Consider the introduction of new life forms in America and how they affect the already existing populations •Explore the ways of controlling the effects of new organisms in a community •Discover the stages of the water cycle •Explore how water and the various stages of the water cycle impact everyday life •Learn where acid rain comes from •Discover how acid rain affects the environment •Consider ways to prevent acid rain in the future •Examine sources of ground pollution •Explore the importance of ground water and fresh water •Consider how the water we drink is affected by pollution •Learn about the carbon cycle - how carbon is circulated through the environment •Discover how carbon relates to people, plants, and animals •Explore the processes in plants and animals that use carbon •Gain a better understanding of how the carbon cycle is affected by pollution •Discover the role carbon plays in both good and harmful processes on Earth •Consider the concepts of global warming and the "greenhouse effect" •Explore how air pollution is affecting every part of the globe •Discover the main air pollution issues •Consider ways to improve air quality •Learn about the food chain •Discover how nature dictates food choices •Understand the importance of the food chain •Discover how the food chain is affected by pollution •Examine the difficulties of repairing damage to the food chain •Realize how invader species can affect the food chain
Unit 3: Final Review and Exam In this unit, you will have the opportunity to prepare for and take the final exam. The final exam may include any material that has been presented throughout the semester. Since this is a comprehensive exam, it may be helpful to organize your notes before you begin to review.		•Identify strategies that you will use to prepare for your exam •Organize your time and study materials •Review your notes, answers to lesson questions and assessments, and key vocabulary terms