Wyoming Department of Education Required Virtual Education Course Syllabus

BIG HORN COUNTY SCHOOL DISTRICT #1

Program Name	WYCA	Content Area	Science
Course ID	CASC80411	Grade Level	9, 10, 11, 12
Course Name	Environmental Science B	# of Credits	0.5
SCED Code	03003G0.5022	Curriculum Type	Connections Academy

COURSE DESCRIPTION

This is the second 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-PS3-1	Create or apply a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.
HS-PS3-4	Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system.
HS-ESS3-1	Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity.
HS-ESS3-2	Evaluate competing design solutions for developing, managing, and using energy and mineral resources based on cost -benefit ratios.
HS-ESS3-3	Use computational tools to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
HS-ESS3-4	Evaluate or refine a technological solution that reduces impacts of human activities on natural 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.
HS-ETS1-1	Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
HS-ETS1-2	Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
HS-ETS1-3	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.
HS-ETS1-4	Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.
HS-ETS1-5	Evaluate the validity and reliability of claims in a variety of materials.

SCOPE AND SEQUENCE

UNIT OUTLINE	STANDARD#	OUTCOMES
Unit 1: Environmental Science Programs and Policies The United States has several agencies and departments that are dedicated to monitoring and protecting the nation's natural resources. In this unit, you will learn about how these local and federal agencies work together to effect policy changes, regulate environmental concerns, and prevent further harm to the environment as we move into the future.	HS-ESS3-1, HS-ETS1-1, HS-ETS1-2, HS-ETS1-3, HS-ETS1-4, HS-ETS1-5	•Learn about the departments and agencies that the United States has established to monitor specific issues in the environment •Discover how the different agencies overlap focus on issues and work together to find solutions to problems in the environment •Explore the government's new energy legislation and what it means for individuals and companies •Consider the supply and demand of energy •Discover the advantages and disadvantages of the new laws •Learn about the Environmental Protection Agency and how it works to make the environment clean and safe •Explore the laws that the EPA has developed to prevent further harm to the environment •Discover how local government works with the EPA to regulate pollution in cities and towns •Discover environmental problems which affect the planet and its species •Explore how deforestation creates even greater problems with global warming •Consider the efforts some make to clean up the environment and the lack of effort by others •Discover various environmental groups that work to improve the environment •Explore how environmental groups take different approaches to pollution and its control •Discover the ways people are saving energy in their homes •Consider how older homes can be more energy efficient •Learn about the entire process of waste management •Explore the different classes of waste processing •Learn about the process of composting biodegradable materials •Discover the benefits of composting and how it can help reduce waste in landfills •Discover the growing problems faced by waste in space •Realize the damage space waste can cause •Explore methods of cleaning up space waste •Discover the importance of the trucking industry •Consider ways to make trucking transportation safer •Learn about the laws that govern the trucking industry

Unit 2: The Effects of Environmental Science Technology There have been many recent advancements in environmental science technology. Many of the previous methods of energy and fuel production have caused harm to the world around you. Today, there are new and innovative methods geared towards preserving and protecting the environment. In this unit you will examine these technological advances and learn how environmental science is changing.	HS-PS3-1, HS-PS3-4, HS-ESS3-1, HS-ESS3-2, HS-ESS3-3, HS-ESS3-4, HS-ESS3-6, HS-ETS1-1, HS-ETS1-3, HS-ETS1-4, HS-ETS1-5	•Discover the basic theory of generating electricity •Explore different ways to generate electricity •Consider ways power plants can harm the environment •Explore new designs for safely producing power •Discover how energy sources are harnessed to produce power •Discover the basic steps of oil production •Explore how the environment can be effected by oil drilling •Explore the world's need for farmers •Discover the many diverse crops grown in the United States •Understand why farmland is being sold and developed into new homes and businesses •Consider the need to preserve our nation's farmlands •Learn about new technologies in agriculture •Discover how these technologies are helping and hurting today's farmers •Explore what can be done to help American farmers keep their land •Discover integrated pest management techniques •Explore how using IPM can help save crops in an environmentally-friendly way •Compare and consider the pros and cons of genetically altering foods •Discover how GMOs are helping to improve the products we buy •Explore ways GMOs are helping doctors cure diseases •Learn about how the Bureau of Land Management regulates land under its control •Explore the reintroduction of wild species into national parks and the impact it has on the existing species •Discover the Acts of Congress that protect federal land and the animals living there •Discover why corn is the most important crop in the United States and across the globe •Explore the many uses of corn from food to blankets •Learn about a more efficient fuel made from corn •Review the keywords from this course •Recap the main ideas of this course •Consider your role in protecting and preserving the Earth
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