

Environmental Science (4340) Course Overview Curriculum Document

Course Description

In this course students will explore and evaluate how the environment works, how humans interact with the environment, and how we can reduce our environmental impact. Integrating concepts from biology, chemistry, and earth science, students investigate the complex interrelationships of our natural world and make connections to their own lives. Students will develop skills in critical thinking, problem solving, & evaluating issues to become environmentally literate citizens.

Credits	Prerequisites
1	Biology 4110
Board Approved	Revised
May 1997; June 2007, June 2023	June 1998, April 2007, May 2023

Required Assessments

District-wide, standards-based common summative assessments

Textbooks/Resources

Miller, T., G & Spoolman, S., E. (2023). *Environmental Science: Sustaining your world*. Cengage Learning: National Geographic. [Updated Edition]
ISBN: 978-1-305-63742-9

Course Essential Understandings

As a result of successfully completing this course, students will understand:

- Natural and human activities influence the stability of ecosystems.
- Every person or group of people produces an ecological footprint, which may or may not be harmful.
- Earth's resources are limited and need to be managed in a sustainable way.

Course Relevance Questions

How do ecosystems function and maintain equilibrium?

How do humans impact the environment both negatively and positively?

Unit Overviews

Unit Name	Unit Description	Unit Relevance Question	Instructional Standards	Assessed Standards
Unit 1: Introduction to Environmental Science (history and natural resources)	By the end of this unit, students will understand the history of environmental science and have an overview of natural resources. The following topics will be explored in this unit: what is environmental science, history of environmental science including influential individuals, and sustainability.	What is environmental science?	HS-ESS3-3 HS-ESS3-4	HS-ESS3-3
Unit 2: Ecosystems/Ecology	By the end of this unit, students will understand the dynamics of an ecosystem. The following concepts will be explored in this unit: major ecosystem components, energy and matter in an ecosystem, and the processes necessary to maintain equilibrium in an ecosystem.	How do matter and energy move through an ecosystem? What happens to ecosystems when the environment changes?	HS-ESS2-6 HS-LS2-6 HS-LS2-4	HS-LS2-6 HS-LS2-4
Unit 3: Wildlife Populations	By the end of this unit, students will understand the dynamics of wildlife populations. The following topics will be explored in this unit: roles species play in an ecosystem, how populations change over time, biodiversity, and sustaining biodiversity.	How do organisms interact in groups so as to benefit individuals? How does biodiversity lead to more resilient ecosystems?	HS-LS2-6 HS-LS2-8	HS-LS2-6 HS-LS2-8
Unit 4: Human Populations	By the end of this unit, students will understand the dynamics of human populations. The following topics will be explored in this unit: carrying capacity, factors that influence population size, population growth, and impacts of a growing population.	What factors influence the size of the human population?	HS-LS2-1 HS-LS2-7	HS-LS2-1
Unit 5: Energy and Climate Change	By the end of this unit, students will understand energy resources and climate change. The following topics will be explored in this unit: renewable vs. nonrenewable resources, major air pollutants, the impacts of pollution, and solutions for sustainability.	What are the advantages and disadvantages of renewable and nonrenewable energy resources? What are the effects of climate change?	HS-ESS2-6 HS-ESS3-2 HS-ESS3-5 HS-LS2-7	HS-LS2-7 HS-ESS3-5
Unit 6: Land Resources	By the end of this unit, students will understand how people use and impact land resources. The following topics will be explored in this unit: current land resource issues, how they impact food production, pest management, forestry resources, and/or soil resources, and solutions for sustainability.	How does human's use of land impact the environment?	HS-LS2-7	HS-LS2-7
Unit 7: Water Resources	By the end of this unit, students will understand the importance of fresh water and current water quality issues. The following concepts will be explored in this unit: the water cycle, uses of water, sources and types of water pollution, and solutions for sustainability.	How does human's use of water impact the environment?	HS-LS2-7	HS-LS2-7