

Haddon Township High School
Course Overview Template

Subject Area: Science
Course Name: Environmental Science

Summary: Environmental Science is the study of human values in relation to the quality of the environment, as well as an in-depth study of local and worldwide land use. The course is designed for students interested in environmental studies and issues. Emphasis is on critical thinking, problem solving, simulation studies, field studies, and research on current environmental problems and concerns.

Unit Title	Student Learning Target	Standards	Resources	Assessment
Cycles	<p><i>Students will ...</i></p> <ul style="list-style-type: none"> • Identify the parts of 3 different natural cycles of earth. • Differentiate between an acid and base in relationship to the pH scale. • Collect and identify particulate pollution. • Collect and analyze the pH of rain water. 	<p>5.1 Science Practices All students will understand that science is both a body of knowledge and an evidence-based, model-building enterprise that continually extends, refines, and revises knowledge. The four Science Practices strands encompass the knowledge and reasoning skills that students must acquire to be proficient in science.</p> <p>5.2 Physical Science: All students will understand that physical science principles, including fundamental ideas about matter, energy, and motion, are powerful conceptual tools for making sense of phenomena in physical, living, and Earth systems science.</p> <p>5.3 Life Science: Life science principles are powerful conceptual tools</p>	<p>Colored pencils and markers; universal indicator charts, rain collection dishes or vials, laminated Haddon Township map, plastic Petri dishes with grids, petroleum jelly; textbooks and online materials: Holt McDougal <i>Environmental Science</i> by Heithaus & Arms, 2013.</p>	<p>Water cycle poster; acid rain cartoon; carbon/oxygen game. Lab activities: pH "soup" lab which includes mapping the acid rain figures on a Haddon Township map, collection and analysis of particulates in Petri dishes.</p>

		<p>for making sense of the complexity, diversity, and interconnectedness of life on Earth. Order in natural systems arises in accordance with rules that govern the physical world, and the order of natural systems can be modeled and predicted through the use of mathematics.</p> <p>9.1 21st Century Life & Career Skills</p> <p>All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.</p>		
Adaptations	<p><i>Students will ...</i></p> <ul style="list-style-type: none"> • Gain an understanding of geological time. • Describe how landforms change. • Compare DNA sequences to determine what a species is. • Research and present an extinct species of human ancestry. 	<p>5.1 Science Practices</p> <p>All students will understand that science is both a body of knowledge and an evidence-based, model-building enterprise that continually extends, refines, and revises knowledge. The four Science Practices strands encompass the knowledge and reasoning skills that students must acquire to be proficient in science.</p> <p>5.4 Earth Systems Science:</p>	<p>Portable computers to run Plate Tectonics CD, library or computer with Internet access to research the extinct species, fossils, DNA sequencing charts; textbooks and online materials: Holt McDougal <i>Environmental Science</i> by Heithaus & Arms, 2013.</p>	<p>Oral presentation, written presentation, and the timeline of existence of an extinct species of human ancestry.</p>

		All students will understand that Earth operates as a set of complex, dynamic, and interconnected systems, and is a part of the all-encompassing system of the universe.		
Populations, Food Webs and Ecosystems	<p><i>Students will ...</i></p> <ul style="list-style-type: none"> • Identify organisms based on mouth structure. • Explain why an omnivore has the best chance of evolutionary survival. • Diagram a complex food web. 	5.3 Life Science: Life science principles are powerful conceptual tools for making sense of the complexity, diversity, and interconnectedness of life on Earth. Order in natural systems arises in accordance with rules that govern the physical world, and the order of natural systems can be modeled and predicted through the use of mathematics.	Owl pellets, dissection tools and tray, stereoscopic scopes, charts to identify bones; textbook and online materials: Holt McDougal <i>Environmental Science</i> by Heithaus & Arms, 2013.	Owl pellet dissection, with completed prey skeleton, 2 graphs, and a food web diagram based on class data. Comparison of prey and biomass graphs, noting differences.
Energy	<p><i>Students will</i></p> <ul style="list-style-type: none"> • Describe the forms of energy that humans have used to meet their needs since the beginning of the 20th century. • Compare advantages and disadvantages of each source of energy. • Distinguish between fossil fuels and alternative energy forms. • Illustrate how a nuclear power plant works. 	<p>5.1 Science Practices</p> <p>All students will understand that science is both a body of knowledge and an evidence-based, model-building enterprise that continually extends, refines, and revises knowledge. The four Science Practices strands encompass the knowledge and reasoning skills that students must acquire to be proficient in science.</p> <p>5.2 Physical Science: All students will understand that physical science</p>	Internet access for research and Power Point software; textbook and online materials: Holt McDougal <i>Environmental Science</i> by Heithaus & Arms, 2013.	Energy Research: Choose 2 forms of energy to meet ALL U.S. energy needs in the 21st century and compare advantages and disadvantages of each source of energy in a written report and Power Point presentation.

		<p>principles, including fundamental ideas about matter, energy, and motion, are powerful conceptual tools for making sense of phenomena in physical, living, and Earth systems science.</p> <p>5.4 Earth Systems Science: All students will understand that Earth operates as a set of complex, dynamic, and interconnected systems, and is a part of the all-encompassing system of the universe.</p> <p>9.2 Personal Financial Literacy: All students will develop skills and strategies that promote personal financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy.</p>		
Toxic and Solid Waste	<p><i>Students will ...</i></p> <ul style="list-style-type: none"> • Identify at least one characteristic that makes a material biodegradable. • Learn the necessary functions of a package. • Describe how a modern landfill works. • Name two environmental problems associated with landfills. 	<p>5.4 Earth Systems Science: All students will understand that Earth operates as a set of complex, dynamic, and interconnected systems, and is a part of the all-encompassing system of the universe.</p> <p>9.2 Personal Financial Literacy: All students will develop skills and</p>	Textbook and online materials: Holt McDougal <i>Environmental Science</i> by Heithaus & Arms, 2013.	Students record their trash for 1 week and categorize it by methods of disposal. They will identify ways that their trash could have been minimized, recycled or composted. As a result, they will critically examine a trashed package that they used and design a new, environmentally-friendly package.

	<ul style="list-style-type: none"> • Compare and contrast sanitary landfills and trash-to-steam plants. • List alternatives to toxic chemicals. • Identify several benefits to recycling and composting. 	strategies that promote personal financial responsibility related to financial planning, savings, investment, and charitable giving in the global economy.		
Ground Water	<p><i>Students will ...</i></p> <ul style="list-style-type: none"> • Predict and observe how liquids move through solids. • Explain why fresh water is one of Earth's limited resources. • Describe the relationship between groundwater and surface water in a watershed. • Explain how water is treated so that it can be used for drinking purposes. • Identify five ways that water can be conserved. • Explain why groundwater pollution is difficult to clean up. • Analyze a pollution problem and choose a clean-up method. 	<p>5.4 Earth Systems Science: All students will understand that Earth operates as a set of complex, dynamic, and interconnected systems, and is a part of the all-encompassing system of the universe.</p> <p>9.1 21st Century Life & Career Skills All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.</p>	CEPUP kit FRUITVALE, town maps, graduated cylinders; Hach water testing kits; textbook and online materials: Holt McDougal <i>Environmental Science</i> by Heithaus & Arms, 2013.	<p>Fruitvale lab activity: assess the aquifer design of the town of Fruitvale, determine the location and cause of water pollution of the town's water source, select a viable clean-up method. Draw a map and present data table of well testing results; analyze results and suggest solutions by answering lab questions.</p> <p>Newton Creek lab activity: test the abiotic qualities of Newton Creek and compare the results to those of another water source to determine water quality. Report results and answer analysis questions.</p>
New Jersey Pinelands and Tidal Marshes	<p><i>Students will ...</i></p> <ul style="list-style-type: none"> • Describe the cycle of tides. • Describe the factors that determine where an organism lives in an 	5.3 Life Science: Life science principles are powerful conceptual tools for making sense of the complexity, diversity, and interconnectedness of life	Internet access for research, colored pencils and markers, construction paper, maps; textbooks and online materials: Holt McDougal <i>Environmental</i>	Create New Jersey travel brochures that entice vacationers and travelers to visit our state in order to experience the Pinelands and tidal marshes found

	<p>aquatic ecosystem like a tidal marsh.</p> <ul style="list-style-type: none"> • Explain why an estuary is a very productive system. • Identify the location of the Pinelands on a map of New Jersey. • Identify at least one unique plant and one unique animal species that live in one of the regions of the Pinelands. 	<p>on Earth. Order in natural systems arises in accordance with rules that govern the physical world, and the order of natural systems can be modeled and predicted through the use of mathematics.</p> <p>9.1 21st Century Life & Career Skills All students will demonstrate the creative, critical thinking, collaboration, and problem-solving skills needed to function successfully as both global citizens and workers in diverse ethnic and organizational cultures.</p>	<p><i>Science</i> by Heithaus & Arms, 2013.</p>	<p>here.</p>