

Gr. 10 Environmental Science Curriculum

Curriculum Standards	Student Learning Goals	FHS Rubric Skill	Suggested Instructional Strategies	Suggested Assessment Techniques
<p>LS 2.1 Global Perspective of Environmental Science</p> <p>LS 2.1.1 The Environmental Challenges We Face</p>	<p>Describe the 3 factors that are most important in determining human impact on the environment</p> <p>Correlate population levels to sustainability</p> <p>Use the scientific method to solve environmental problems</p>	<p>Reader - Skill 7 Compare/Contrast</p> <p>Writer - Skill 7 Compare/Contrast</p> <p>Information Seeker/ Organizer - Skill 3 Gatherings</p> <p>Problem Solver - Skill 2 Organizing Information</p>	<ul style="list-style-type: none"> Case Study: New Orleans Disaster Lab: Onion Conundrum (Arms) Video: Nova – Race to Save the Planet World Watch Institute Website (worldwatch.org) 	<ul style="list-style-type: none"> Test ORQ PowerPoint Presentation Research Paper Lab Report
<p>LS 2.1.2 Environmental Sustainability and Human Values</p>	<p>Evaluate human use of the Earth</p> <p>Define environmental ethics and justice</p> <p>Discuss problems of sustainable living</p>	<p>Reader - Skill 4 Supporting Information</p> <p>Writer - Skill 4 Textual Evidence</p> <p>Information Seeker/ Organizer - Skill 1 Questioning</p> <p>Problem Solver - Skill 4 Fact vs. Opinion FHS Problem solver</p>	<ul style="list-style-type: none"> Case Study: Jakarta, Indonesia Lab: Be an Environmental Journalist (Arms) 	<ul style="list-style-type: none"> Test ORQ PowerPoint Presentation Research Paper Lab Report
<p>LS 2.1.3 Environmental History, Politics, and Economics</p>	<p>Distinguish between conservation and preservation</p> <p>Outline the history of conservation in USA</p> <p>Explain why environmental policy is an important part of law</p>	<p>Reader - Skill 7 Compare/Contrast</p> <p>Writer - Skill 3 Thesis Statement</p> <p>Information Seeker/ Organizer - Skill 3 Gatherings</p>	<ul style="list-style-type: none"> Case Study: Environmental Problems in Central and Eastern Europe Film: <i>A Civil Action</i> Film: <i>Erin Brockovich</i> 	<ul style="list-style-type: none"> Test ORQ PowerPoint Presentation Research Paper Lab Report

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	Relate economics to natural resources	Problem Solver - Skill 2 Organizing Information		
LS 2.1.4 Risk Analysis and Environmental Hazards	Define risk and its assessment Link environmental changes to environmental health hazards Discuss the mobility of toxicants in the environment Determine the health effects of pollutants Discuss the precautionary principle	Reader - Skill 6 Connections Writer - Skill 7 Compare/Contrast Information Seeker/ Organizer - Skill 3 Gathering Problem Solver - Skill 3 Multi-step Tasks	<ul style="list-style-type: none"> Case Study: Endocrine Disrupters 	<ul style="list-style-type: none"> Test ORQ PowerPoint Presentation Research Paper Lab Report
LS 2.2 - The Living Planet LS 2.2.1 How Ecosystems Work	Define ecology Summarize how energy flows through ecosystems Describe how carbon, water, nitrogen, sulfur, and phosphorus are cycled through ecosystems Determine the factors that contribute to an organisms ecological niche Distinguish the different types of interactions among organisms	Reader -Skill 4 Supporting Information Writer - Skill 1 Planning Information Seeker/ Organizer - 4 Synthesizing Problem Solver - 3 Multi-step Task	<ul style="list-style-type: none"> Case Study: Global Climate Change Lab: Showdown on the Prairie (Arms) Lab: What's in an Ecosystem (Arms) Video – Ecology Series – Food Chains/ Nutrient Cycles 	<ul style="list-style-type: none"> Test ORQ PowerPoint Presentation Research Paper Lab Report

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LS 2.2.2 Ecosystems and Evolution	<p>Identify the 9 major terrestrial biomes</p> <p>Summarize important environmental factors that affect aquatic ecosystems</p> <p>Describe evolution by natural selection</p> <p>Define ecological succession</p>		<ul style="list-style-type: none"> • Case Study: Wildfires • Lab: Identify Your Local Biome • Video – In the Company of Whales • Video – Red Wolf • Video – Succession: From Sand Dune to Forest 	<ul style="list-style-type: none"> • Test • ORQ • PowerPoint Presentation • Research Paper • Lab Report
LS 2.2.3 Human Population Change and the Environment	<p>Identify the factors that affect population ecology</p> <p>Summarize the history of human population growth</p> <p>Define demographics</p> <p>Distinguish between developing and developed countries</p> <p>Describe cultural and social methods to stabilize world population</p> <p>Define urbanization and the problems associated with it</p>	<p>Reader - Skill 7 Compare/Contrast</p> <p>Writer - Skill 7 Compare/Contrast</p> <p>Information Seeker/ Organizer - Skill 1 Questioning</p> <p>Problem Solver - Skill 5 Connections</p>	<ul style="list-style-type: none"> • Case Study: Urban Planning in Curitiba, Brazil • Lab: What Causes a Population Explosion? (Arms) 	<ul style="list-style-type: none"> • Test • ORQ • PowerPoint Presentation • Research Paper • Lab Report
<p>LS 2.3 - Atmosphere</p> <p>LS 2.3.1 Air and Air Pollution</p>	<p>Identify the composition and structure of the atmosphere</p> <p>Define the types and sources of air pollution</p>	<p>Reader - Skill 6 Connections</p> <p>Writer - Skill 7 Compare/Contrast</p>	<ul style="list-style-type: none"> • Case Study: Curbing Air Pollution in Chattanooga • Lab: How does acid precipitation affect plants? (Arms) 	<ul style="list-style-type: none"> • Test • ORQ • PowerPoint Presentation • Research Paper • Lab Report

Gr. 10 Environmental Science Curriculum

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	<p>Discuss the adverse health effects of air pollutants</p> <p>Summarize the effects of the Clean Air Act</p> <p>Identify 4 sources of indoor air pollution</p>	<p>Information Seeker/ Organizer - Skill 4 Synthesizing</p> <p>Problem Solver - 5 Connections</p>		
LS 2.3.2 Global Atmospheric Changes	<p>Distinguish between weather and climate</p> <p>Describe the greenhouse effect and the gases that cause it</p> <p>Discuss the effects of ozone depletion</p> <p>Define acid deposition and its effects</p>	<p>Reader - Skill 3 Main Idea</p> <p>Writer - Skill 4 Textual Evidence</p> <p>Information Seeker/ Organizer - Skill 4 Synthesizing</p> <p>Problem Solver - Skill 5 Connections</p>	<ul style="list-style-type: none"> Case Study: International Implications of Global Climate Change Lab: Global Warming in a Jar (Arms) 	<ul style="list-style-type: none"> Test ORQ PowerPoint Presentation Research Paper Lab Report
<p>LS 2.4 - Hydrosphere</p> <p>LS 2.4.1 Freshwater Resources and Water Pollution</p>	<p>Define the structure and properties of water</p> <p>Identify water resource problems</p> <p>Compare and contrast water management strategies Discuss water pollution sources</p> <p>Describe how water quality can be improved</p>	<p>Reader - Skill 3 Main Idea</p> <p>Reader - Skill 7 Compare/Contrast</p> <p>Writer - Skill 4 Textual Evidence</p> <p>Writer - Skill 7 Compare/Contrast</p> <p>Information Seeker/ Organizer - Skill 1 Questioning</p> <p>Information Seeker/ Organizer - Skill 4</p>	<ul style="list-style-type: none"> Case Study: Water pollution in the Great Lakes Lab: How Safe is Our Groundwater? (Arms) Field Trip: MMR groundwater cleanup facility Lab: Waquoit Bay Project Wet Video: Power of Water (National Geographic) 	<ul style="list-style-type: none"> Test ORQ PowerPoint Presentation Research Paper Lab Report

Gr. 10 Environmental Science Curriculum

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		Synthesizing Problem Solver - Skill 5 Connections		
LS 2.4.2 The Ocean and Fisheries	Describe the significance of the ocean on life on Earth Discuss roles of winds and the Coriolis effect in the production of water flow patterns Distinguish among the 4 major ocean life zones Identify the impact of humans on the ocean Explain goals associated with correcting ocean problems	Reader - Skill 3 Main Idea Reader - Skill 6 Connections Writer - Skill 4 Textual Evidence Information Seeker/ Organizer - Skill 1 Questioning Information Seeker/ Organizer - Skill 2 Planning Problem Solver - Skill 2 Organizing Information Problem Solver - Skill 4 Fact vs. Opinion	<ul style="list-style-type: none"> Case Study: Humans and the Antarctic Food Web 	<ul style="list-style-type: none"> Test ORQ PowerPoint Presentation Research Paper Lab Report
LS 2.5 - Lithosphere LS 2.5.1 Mineral and Soil Resources	Diagram the rock cycle Define plate tectonics and identify its effects Define minerals Identify the role of minerals in global economy Relate the environmental impacts of mining and	Reader - Skill 3 Main Idea Reader - Skill 6 Connections Writer - Skill 4 Textual Evidence Information Seeker/ Organizer - Skill 3 Gathering Information Seeker/	<ul style="list-style-type: none"> Case Study: Industrial Ecosystems 	<ul style="list-style-type: none"> Test ORQ PowerPoint Presentation Research Paper Lab Report

Gr. 10 Environmental Science Curriculum

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	<p>refining minerals</p> <p>Define soil</p> <p>Identify the factors involved in soil formation</p> <p>Identify sustainable soil use strategies and soil conservation methods</p>	<p>Organizer - Skill 4 Synthesizing</p> <p>Problem Solver - Skill 2 Organizing</p>		
LS 2.5.2 Land Resources	<p>Summarize land ownership in USA</p> <p>Describe sustainable forestry</p> <p>Explain how monocultures and wildlife corridors are related to forestry</p> <p>Describe rangelands and their uses</p> <p>Define desertification</p> <p>Discuss the administration and goals of National Parks and Wilderness Areas</p> <p>Identify endangered ecosystems</p>	<p>Reader - Skill 3 Main Idea</p> <p>Reader - Skill 7 Compare/Contrast</p> <p>Writer - Skill 4 Textual Evidence</p> <p>Writer - Skill 7 Compare/Contrast</p> <p>Information Seeker/ Organizer - Skill 3 Gathering</p> <p>Information Seeker/ Organizer - Skill 4 Synthesizing</p> <p>Problem Solver - Skill 5 Connections</p>	<ul style="list-style-type: none"> • Case Study: Tongas debate over clear-cutting • Lab: Mining for peanuts (Arms) 	<ul style="list-style-type: none"> • Test • ORQ • PowerPoint Presentation • Research Paper • Lab Report
<p>LS 2.6 - Environment and Society</p> <p>LS 2.6.1 Agriculture and Food Resources</p>	<p>Discuss world food problems</p> <p>Define the principle types of agriculture</p> <p>Summarize the challenges of</p>	<p>Reader - Skill 3 Main Idea</p> <p>Writer - Skill 4 Textual Evidence</p>	<ul style="list-style-type: none"> • Case Study: DDT and the American Bald Eagle • Lab: The Case of the Failing Farm (Arms) 	<ul style="list-style-type: none"> • Test • ORQ • PowerPoint Presentation • Research Paper • Lab Report

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	<p>agriculture</p> <p>Identify the solutions to agricultural problems</p> <p>Describe methods to control agricultural pests</p>	<p>Information Seeker/ Organizer - Skill 3 Gathering</p> <p>Problem Solver - Skill 2 Organizing</p>		
LS 2.6.2 Biological Resources	<p>Describe factors associated with species richness</p> <p>Contrast endangered and extinct species</p> <p>Define conservation biology</p> <p>Discuss conservation policies and laws</p>	<p>Reader - Skill 3 Main Idea</p> <p>Reader - Skill 7 Compare/Contrast</p> <p>Writer - Skill 4 Textual Evidence</p> <p>Writer - Skill 7 Compare/Contrast</p> <p>Information Seeker/ Organizer - Skill 3 Gathering</p> <p>Information Seeker/ Organizer - Skill 5 Evaluating</p> <p>Problem Solver - Skill 4 Fact vs. Opinion</p>	<ul style="list-style-type: none"> Case Study: Reintroducing the California Condor Lab: Backyard Diversity (Arms) 	<ul style="list-style-type: none"> Test ORQ PowerPoint Presentation Research Paper Lab Report
<p>LS 2.7 - Energy and Waste</p> <p>LS 2.7.1 Solid and Hazardous Waste</p>	<p>Identify solid waste management strategies</p> <p>Summarize how reduction, reuse, recycling reduce solid waste</p> <p>Define hazardous waste</p> <p>Identify strategies to manage</p>	<p>Reader - Skill 2 Reading Strategies</p> <p>Reader - Skill 3 Main Idea</p> <p>Writer - Skill 4 Textual Evidence</p> <p>Information Seeker/ Organizer - Skill 4</p>	<ul style="list-style-type: none"> Case Study: High-Tech Waste Field Trip: SEMASS Plant in Rochester, MA Field Trip: Bourne SWM facility, Bourne, MA Lab: Does Fast Food Have to Be Wasteful? (Arms) 	<ul style="list-style-type: none"> Test ORQ PowerPoint Presentation Research Paper Lab Report

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	hazardous waste	Synthesizing Problem Solver - Skill 2 Organizing Information		
LS 2.7.2 Nonrenewable Energy Resources	<p>Compare energy consumption in HDC and LDCs</p> <p>Summarize the environmental problems associated with coal</p> <p>Discuss the environmental problems associated with oil and natural gas</p> <p>Identify the pros and cons of nuclear energy</p>	<p>Reader - Skill 4 Supporting Information Reader - Skill 7 Compare/Contrast</p> <p>Writer - Skill 7 Compare/Contrast</p> <p>Information Seeker/ Organizer - Skill 3 Gathering Information Seeker/ Organizer - Skill 5 Evaluating</p> <p>Problem Solver - Skill 4 Fact vs. Opinion</p>	<ul style="list-style-type: none"> Case Study: The Arctic National Wildlife Refuge 	<ul style="list-style-type: none"> Test ORQ PowerPoint Presentation Research Paper Lab Report
LS 2.7.3 Renewable Energy Resources	<p>Compare the different methods of direct solar energy</p> <p>Compare the potential of wind energy and hydropower Describe geothermal and tidal energy</p> <p>Identify solutions to conserve and maximize energy resources</p>	<p>Reader - Skill 4 Supporting Information Reader - Skill 7 Compare/Contrast</p> <p>Writer - Skill 7 Compare/Contrast</p> <p>Information Seeker/ Organizer - Skill 3 Gathering Information Seeker/ Organizer - Skill 5 Evaluating</p>	<ul style="list-style-type: none"> Case Study: Green Architecture Field Trip: Woods Hole Research Center Lab: Solar Design (Arms) 	<ul style="list-style-type: none"> Test ORQ PowerPoint Presentation Research Paper Lab Report

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		Problem solver - Skill 4 Fact vs. Opinion		
Appendix: Core Vocabulary Terms, Graphic Organizer(s), FHS Skills Rubrics				