

Trimble High School

Grade: 11-12

Subject: Environmental Science

Revised: May 7, 2019

1 st Nine Weeks	2 nd Nine Weeks	3 rd Nine Weeks	4 th Nine Weeks
<p>Science Inquiry and Application</p> <p>These standards are covered from the beginning of school until the first week of September (approximately two weeks). This unit is assessed with a test but practices are used throughout the year with periodic quizzes throughout.</p> <p><u>Earth Systems: Interconnected Spheres of Earth:</u> ENV.ES.2: Atmosphere • Atmospheric properties and currents ENV.ES.3: Lithosphere • Geologic events and processes ENV.ER.4: Soil and land • Desertification • Mass movement and erosion • Sediment contamination • Land use and land management (including food production, agriculture and zoning) • Solid and hazardous waste</p> <p>In an introduction to environmental science, we give an overall view of how humans influence the environment in discussing human activity and ecological footprints</p> <p>For the next three weeks after the introductory science inquiry unit, Environmental Science covers two topics. The first topic covered is the layers of Earth’s atmosphere. Students learn the different layers of the atmosphere and conduct labs observing temperature and pressure changes at each level. Students take notes on the section, complete various review sheets, and take a quiz</p>	<p>Ecosystems ENV.ES.1: Biosphere • Evolution and adaptation in populations • Biodiversity • Ecosystems (equilibrium, species interactions, stability) • Population dynamics</p> <p>For the first two-three weeks of the nine weeks, the class will cover biomes. In biomes, we discuss the different types of biomes that exist in the world. Throughout the unit, students will pick a biome to make a presentation on as well as building a diorama representing their biome. These are assessed to check for true understanding of their biome. Various homework assignments are given and the unit is wrapped up with a summative assessment. The primary focus is on terrestrial biomes.</p> <p>The next unit which covers approximately two weeks is water biomes. We discuss freshwater ecosystems as well as marine ecosystems. The differences between the two are discussed such as salinity, plant and animal life. Various formative assessments are given in the form of practice quizzes, and assignments and is wrapped up with a</p>	<p>Biodiversity ENV.ES.1: Biosphere • Evolution and adaptation in populations • Biodiversity • Ecosystems (equilibrium, species interactions, stability) • Population dynamics ENV.GP.8: Deforestation and loss of biodiversity ENV.ER.5: Wildlife and wilderness • Wildlife and wilderness management Endangered species • Invasive Species • Introduced Species</p> <p>For the first three weeks of the quarter we discuss biodiversity. In this unit, students learn about the basics of biodiversity and what are the benefits of an earth that is rich in biodiversity. Students will learn about endangered or extinct species, assessed by a paper on a species they choose. They also design a “least wanted” poster about an invasive species. They will also learn about the pharmaceutical effects that certain plants have. A summative assessment is given at the end of the unit.</p> <p>Water ENV.ER.3: Water and water pollution • Potable water and water quality • Hypoxia,</p>	<p>Air Pollution ENV.ER.2: Air and air pollution • Primary and secondary contaminants • Greenhouse gases • Clean Air Act</p> <p>For the first three and a half weeks of the quarter, air pollution is covered. Students will learn about types of pollutants, noise and light pollution, asthma, and acid rain. Several projects are given in this unit. Students research the link between asthma and air pollution. They will also research three different vehicles and compare fuel mileage and carbon emissions and reflect on the vehicles of their choice. The unit is wrapped up with a test given over air pollution.</p> <p>Climate Change</p> <p>The next three weeks approximately are spent discussing climate change. Students will learn about the history of global warming and its transition into the name climate change. Students will learn what causes climate change as well as the political controversy behind it. Students watch a movie that discusses what would</p>

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at the end of the section to check for understanding. Once this section is complete, we transition into layers of Earth's geosphere. Students discuss the general layers of the Earth as well as the more specific layers. We do a review of plate tectonics from middle school sciences and conduct a lab demonstrating the different plate shifts in the lithosphere. Students learn a little about what causes earthquakes and different volcanoes found around earth, which turns into a presentation where students pick a volcano of their choice and make a presentation about that volcano, its characteristics, and its activity level.

Ecology

ENV.ES.1: Biosphere • Evolution and adaptation in populations • Biodiversity • Ecosystems (equilibrium, species interactions, stability) • Population dynamics

For the next two weeks, we cover basics of Ecology. For those students who took Biology or Field and Stream, this chapter is review over what they should already know. During this unit, students will review the three types of symbiotic relationships and look at more complex symbiotic relationships. This will be assessed by a research paper, giving summaries of eight upper level relationships. Then, students will review food chains vs food webs and levels of organization. Assessments include entrance slips, in class assignments, and an end of chapter assessment at the end of the unit. This unit is more fast-paced since this is a review unit.

chapter test.

The last unit that is covered in the semester is about populations. In this unit, human population is covered, as well as types of growth, and overall population trends. Students have a project in this unit where they pick a country and report the population trends that they notice to their classmates. A short quiz is given but the primary mode of assessment is the population project that they are researching.

eutrophication • Clean Water Act • Point source and non-point source contamination

The rest of the quarter is spent on water pollution. The unit starts off with students building a water filter using natural materials and a 2L bottle, having a competition as to what group can make the cleanest water. Then, students learn about different water sources and where they are found on earth. They'll learn what economic sectors use the most water (industrial, agricultural, and residential). Students will learn also learn about different types of water pollution and its effects. To show how lucky students are, I show a video about water shortages happening in other countries. This seemed to grasp their attention and made them realize how good we have it in the U.S. We also watch a video called "GasLand" that shows the effects of hydraulic fracking on the water supply. Fracking is a hot issue in SE Ohio so this video would be a relevant one to show. A quiz was given over sources of water and a summative test was given at the end of the unit.

happen if Earth temperatures increased by only six degrees. Once everything is covered, students will write a paper about their opinion on climate change, if it's a problem, and the sources to support their opinion.

Political Climate

The last couple of weeks are spent discussing the economics and politics behind environmental science. Students will look at different laws and policies that were passed the affect everything related to environmental science.

Throughout the year

Various environmental issues are covered throughout the units. These are the standards this topic covers: **ENV.GP.1: Human Population ENV.GP.2: Potable water quality, use and availability ENV.GP.3: Climate change ENV.GP.4: Sustainability ENV.GP.5: Species depletion and extinction ENV.GP.6: Air quality ENV.GP.7: Food production and availability ENV.GP.8: Deforestation and loss of biodiversity ENV.GP.9: Waste management (solid and hazardous)**

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Biogeochemical Cycles
ENV.ES.4: Hydrosphere • Oceanic currents and patterns (as they relate to climate) • Surface and ground water flow patterns and movement • Cryosphere
ENV.ES.5: Movement of matter and energy through the hydrosphere, lithosphere, atmosphere and biosphere • Energy transformation on global, regional and local scales • Biogeochemical cycles • Ecosystems • Weather • Climate

For the final weeks of the nine weeks, we cover biogeochemical cycles. This unit entails a very brief review of the water cycle this should be previously known material. Then, the carbon, nitrogen, and phosphorous cycles are discussed in depth. Students will learn the mechanisms of each cycle and the environmental impacts each cycle has. Various in class assignments are given to check for understanding of concepts. Two final assessments are given, one being a standard end of section quiz and the other being a game.

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