Reavis High School
Advanced Placement Environmental Science
Curriculum Snapshot

Unit 1: The Living World: Ecosystems
The first unit sets the foundation for the course by examining the Earth as a system with interdependent components, processes, and relationships. Students will examine the distribution of resources in ecosystems and its influences on species interactions. There is a global distribution of terrestrial and aquatic biomes—regional ecosystems—that each have specific environmental features based on their shared climate. This distribution is dynamic, and it has changed due to global climate change. Each ecosystem relies on biogeochemical cycles for survival. These cycles facilitate the acquisition and transfer of energy into usable forms, and they can be altered by human activities. In subsequent units, students will apply their understanding of ecosystems to the living world and examine the importance of biodiversity.
Number of Days: 14

Unit 2:The Living World: Biodiversity
You'll learn about the importance of biodiversity within ecosystems and the impact of outside factors on the evolution of organisms. We will observe examples of both local and global Biodiversity, including genetic, species, and habitat diversity, which is critically important to ecosystems. Biodiversity in ecosystems is a key component to sustaining life within the living world. This unit covers the short- and long-term impacts caused by both natural and human disruptions on ecosystems. The concept of ecological succession will be explored in terrestrial and aquatic ecosystems in both developed and developing areas. Organisms within ecosystems must adapt to the changes created by these disruptions.
Number of Days: 12

Unit 3: Populations
You'll examine how populations within ecosystems change over time, and the factors that affect population growth. Populations within ecosystems change over time in response to a variety of factors. This unit examines the relationship between the type of species and the changes in a habitat over time. Specialist species are advantaged by habitats that remain constant, while generalist species tend to be advantaged by habitats that are changing. The

concept of different reproductive patterns will be covered, including those exhibited by K- and r-selected species, also impact changes to population. Population growth is limited by environmental factors, especially by the availability of resources and space.

Number of Days: 12

Unit 4: Earth Systems and Resources

This unit explores earth systems and its resources that support life. Geological changes that occur to earth systems at convergent and divergent boundaries can result in the creation of mountains, island arcs, earthquakes, volcanoes, and seafloor spreading. Soils are a resource, formed when parent material is weathered, transported, and deposited. The atmosphere is another resource, composed of certain percentages of major gases. Climate is influenced by the sun's energy, Earth's geography, and the movement of air and water. You'll study the natural components that make up the environment, from geologic features to the atmosphere and climate.Topics may include tectonic plates, soil formation and erosion, earth's atmosphere, global wind patterns, earth's geography and climate, el Niño and La Niña

Number of Days: 12

Unit 5: Land and Water Use

This unit explores human activities that disrupt ecosystems both positively and negatively and the methods employed to reduce impact. It examines human use of natural resources through many means, including mining and clearcutting, and the impacts on the environment. Agricultural practices in particular can cause environmental disruption. For example, one of the largest uses of freshwater is for irrigation. Every irrigation method employed for agriculture has its own benefits and drawbacks. You'll examine how humans use and consume natural resources, and the ways in which we disrupt ecosystems, both positively and negatively. Topics may include the tragedy of the commons, The Green Revolution, types and effects of irrigation, pest-control methods, meat production methods and overfishing, the impacts of mining, urbanization and ecological footprints, and an introduction to sustainable practices including crop rotation and aquaculture.

Number of Days: 18

Unit 6: Energy Resources and Consumption

This unit examines human use of renewable and nonrenewable sources of energy and its impact on the environment. Energy consumption differs throughout the world and the availability of natural energy resources depends on the region's geologic history. Identification of where natural energy resources occur (e.g., coal, crude oil, ores) on a global map and describe trends in energy consumption. Also describe the use and methods of power generation for each fuel source (e.g., fossil fuels, nuclear, biomass, solar, hydroelectricity,

geothermal, hydrogen fuel cells, wind) and the effects of the use of each energy type in power generation on the environment. You will also examine methods for conserving energy industrially and around the home.

Number of Days: 16

Unit 7: Atmospheric Pollution

You'll learn more about air pollution, including how human actions can cause it, and you'll analyze legislation intended to regulate emissions and improve air quality. Air pollution has many sources and effects, both indoors and outdoors. Air is a natural resource that covers the Earth and crosses many system boundaries. Human activities affect the quality of the air both indoors and outdoors. Through legislation, the Clean Air Act regulates the emission of air pollutants that affect human health. The gases and particulates in the atmosphere come from both natural and human sources; once air pollution sources are identified, methods can be used to reduce it. Topics may include photochemical smog, indoor air pollution, methods to reduce air pollutants, acid rain, and noise pollution.

Number of Days: 12

Unit 8: Aquatic and Terrestrial Pollution

You'll examine the impact of pollution on ecosystems and learn how to determine its source. Pollution created by human activities directly impacts ecosystems in the air, on land, and in water. The source of pollution can sometimes be easy to identify, but other times the source is diffused. There are many human health issues that can be linked to pollution. Legislation has been created to reduce discharges of pollution in water and regulate drinking water. Increases in waste cause global concerns for organisms that live on land and in water. Topics may include thermal pollution, solid waste disposal and waste reduction methods, pollution and human health, and pathogens and infectious diseases.

Number of Days: 18

Unit 9: Global Change

In the final unit, students will explore how local and regional human activities can have a global impact. A central aspect of environmental science is to understand the global impact of local and regional human activities. Humans can mitigate their impact through sustainable use of resources. Human activities can cause ozone depletion in the stratosphere and increases in the greenhouse gases in the atmosphere. Increases in greenhouse gases can cause human health and environmental problems. These environmental problems include global climate change, ocean warming, and endangered species. This last unit Topics may include ozone depletion, global climate change, ocean warming and acidification, invasive species, and human impacts on diversity. You'll come to understand the global impact of local and regional human activities, evaluate, and propose solutions. Overall, this course provides an

opportunity to examine the interrelationships among the natural world and challenges students to evaluate and propose solutions to a variety of environmental problems.
Number of Days: 20