Environmental Science – 1st Semester Pacing Chart

Unit 0 Characteristics of Science Throughout Semester

The Characteristics of Science Standards are introduced here and stressed throughout the semester.

Unit 1: Understanding our Environment Chapters 1-2 ~ 2.5 weeks

Standards:

SEV4: Students will understand and describe availability, allocation and conservation of energy and other resources

SEV5: Students will recognize that human beings are part of the global ecosystem and will evaluate the effects of human activities and technology on ecosystems.

Content Elements:

SEV4a. Differentiate between renewable and nonrenewable resources including how different resources are produced, rates of use, renewal rates, and limitations of sources. Distinguish between natural and produced resources.

SEV4d. Describe the relationship of energy consumption and living standards of society.

SEV4f. Describe the need for informed decision making of resource utilization. (*i.e.* energy and water usage allocation, conservation, food and land, and long-term SEV5c. Explain how human activities affect global and local sustainability.

SEV5d. Describe the actual and potential effects of habitat destruction, erosion, and depletion of soil fertility associated with human activities.

Unit 2: The Living World Chapters 3 – 6 ~ 3.5 Weeks

Standards:

SEV1: Students will investigate the flow of energy and cycling of matter within an ecosystem and relate these phenomena to human society.

SEV2: Students will demonstrate an understanding that the Earth is one interconnected system.

SEV3: Students will describe stability and change in ecosystems.

SEV5: Students will recognize that human beings are part of the global ecosystem and will evaluate the effects of human activities and technology on ecosystems.

Content Elements:

SEV1a. Interpret biogeochemical cycles including hydrologic, nitrogen, phosphorus, oxygen, and carbon cycles. Recognize that energy is not recycled in ecosystems.

SEV1b. Relate energy changes to food chains, food webs, and to trophic levels in a generalized ecosystem, recognizing that entropy is a primary factor in the loss of usable food energy during movement up the trophic levels.

SEV1c. Relate food production and quality of nutrition to population growth and the trophic levels.

SEV1d. Relate the cycling of matter and the flow of energy to the Laws of Conservation of matter and energy. Identify the role and importance of decomposers in the recycling process

SEV1e. Distinguish between abiotic and biotic factors in an ecosystem and describe how matter and energy move between these.

SEV2a. Describe how the abiotic components (water, air, and energy) affect the biosphere**.**

SEV2b. Recognize and give examples of the hierarchy of the biological entities of the biosphere (organisms, populations, communities, ecosystems, and biosphere).

SEV2c. Characterize the components that define a Biome. Abiotic Factors – to include precipitation, temperature and soil; and biotic Factors – plant and animal adaptations that create success in that biome.

SEV2d. Characterize the components that define fresh-water and marine systems. Abiotic Factors – to include light, dissolved oxygen, phosphorus, nitrogen, pH and substrate; and biotic Factors – plant and animal adaptations characteristic to that system.

SEV3a. Describe interconnections between abiotic and biotic factors, including normal cyclic fluctuations and changes associated with climatic change (i.e. ice ages)

SEV3b. Explain succession in terms of changes in communities through time to include changes in biomass, diversity, and complexity.

SEV3c. Explain how succession may be altered by traumatic events

SEV3d. Explain how biotic and abiotic factors influence populations.

SEV3e. Describe interactions between individuals (*i.e.* mutualism, commensalisms, parasitism, predation, and competition).

SEV5a. Describe factors affecting population growth of all organisms including humans. Relate these to factors affecting growth rates and carrying capacity of the environment.

Unit 3: Populations and Pollution Chapters 7, 11 ~2.5 Weeks

Standards:
SEV5: Students will recognize that human beings are part of the global ecosystem and will evaluate the effects of human activities and technology on ecosystems.

Content Elements:
SEV5b. Describe the effects of population growth, demographic transitions, cultural differences, emergent diseases, etc. on societal stability.

SEV5e. Describe the effects and potential implications of pollution and resource depletion on the environment at the local and global levels (*e.g.* air and water pollution, solid waste disposal, depletion of the stratospheric ozone, global warming, and land uses).