Arkansas Science

Environmental Science: Grades 9, 10, 11, 12

Adopted 2018

Systems

EVS-ESS2-2. Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems. EVS-ESS2-2

EVS-ESS2-3. Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection. EVS-ESS2-3

EVS-ESS2-5. Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes. EVS-ESS2-5

EVS-ESS2-6. Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere. EVS-ESS2-6

EVS-ESS3-5. Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems. EVS-ESS3-5

EVS1-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants. EVS1-ETS1-1

Energy

EVS-PS3-1. Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known. EVS-PS3-1

EVS-PS3-2. Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects). EVS-PS3-2

EVS-PS3-3. Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy. EVS-PS3-3

	EVS-PS3-4. Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics). EVS-PS3-4
	EVS-ESS2-4. Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate. EVS-ESS2-4
	EVS2-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering. EVS2-ETS1-2
Populations	**EVS-LS2-1.** Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales. EVS-LS2-1
	EVS-LS2-2. Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales. EVS-LS2-2
	EVS-LS2-6. Evaluate claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem. EVS-LS2-6
	EVS-LS2-8. Evaluate evidence for the role of group behavior on individual and species' chances to survive and reproduce. EVS-LS2-8
	EVS3-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and tradeoffs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts. EVS3-ETS1-3
Sustainability	**EVS-ESS3-1.** Construct an explanation based on evidence for how the availability of natural resources, occurrences of natural hazards, and changes in climate have influenced human activity. EVS-ESS3-1
	EVS-ESS3-2. Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios. EVS-ESS3-2
	EVS-ESS3-3. Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity. EVS-ESS3-3
	EVS-ESS3-4. Evaluate or refine a technological solution that reduces impacts of human activities on natural systems. EVS-ESS3-4

EVS-ESS3-6. **Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.** EVS-ESS3-6

EVS-LS2-7. **Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.** EVS-LS2-7

EVS-ESS3-7. **Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.** EVS-ESS3-7

EVS4-ETS1-3. **Evaluate a solution to a complex real-world problem based on prioritized criteria and tradeoffs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.** EVS4-ETS1-3