



## Environmental Science

Strand	Standards	Benchmarks	Unit Name	Course Topic Description
PD Physical Dynamics	PD.1 Students shall understand the physical dynamics of Earth.	PD.1.ES.1 Describe the structure, origin, and evolution of the Earth's components:	Introduction to Environmental Science	The Dynamic Earth
		PD.1.ES.1.a atmosphere	Introduction to Environmental Science	The Dynamic Earth
		PD.1.ES.1.b biosphere	Introduction to Environmental Science	The Dynamic Earth
		PD.1.ES.1.c hydrosphere	Introduction to Environmental Science	The Dynamic Earth
		PD.1.ES.1.d lithosphere	X	
		PD.1.ES.2 Relate eras, epochs, and periods of Earth's history to geological development	X	
		PD.1.ES.3 Determine the relative and absolute ages of rock layers	X	
		PD.1.ES.4 Categorize the type and composition of various minerals	Mineral and Energy Resources	Mining and Mineral Resources
		PD.1.ES.5 Explain the processes of the rock cycle	X	
		PD.1.ES.6 Describe the processes of degradation by weathering and erosion	X	
		PD.1.ES.7 Describe tectonic forces relating to internal energy production and convection currents	X	
		PD.1.ES.8 Describe the relationships of degradation (a general lowering of the earth's surface by erosion or weathering) and tectonic forces:	X	
		PD.1.ES.8.a volcanoes	X	

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		PD.1.ES.8.b earthquakes	X	
		PD.1.ES.9 Construct and interpret information on topographic maps	X	
		PD.1.ES.10 Describe the characteristics of each of the natural divisions of Arkansas:	X	
		PD.1.ES.10.a Ozark Plateau	X	
		PD.1.ES.10.b Arkansas River Valley	X	
		PD.1.ES.10.c Ouachita Mountains	X	
		PD.1.ES.10.d Coastal Plain	X	
		PD.1.ES.10.e Mississippi Alluvial Plain (Delta)	X	
		PD.1.ES.10.f Crowley's Ridge	X	
		PD.1.ES.11 Describe the physical and chemical properties of water	Water, Air and Land	Water
		PD.1.ES.12 Compare and contrast characteristics of the oceans:	X	
		PD.1.ES.12.a composition	Introduction to Environmental Science	The Dynamic Earth
		PD.1.ES.12.b physical features of the ocean floor	X	
		PD.1.ES.12.c life within the ocean	X	
		PD.1.ES.12.d lateral and vertical motion	X	
		PD.1.ES.13 Investigate the evolution of the ocean floor	X	
		PD.1.ES.14 Investigate the stratification of the ocean:	X	
		PD.1.ES.14.a colligative properties (depends on the ratio of the number of particles of solute and solvent in the solution, not the identity of the solute)	X	



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		PD.1.ES.14.b biological zonation (distribution of organisms in biogeographic zones)	X	
		PD.1.ES.15 Predict the effects of ocean currents on climate	X	
		PD.1.ES.16 Explain heat transfer in the atmosphere and its relationship to meteorological processes:	X	
		PD.1.ES.16.a pressure	X	
		PD.1.ES.16.b winds	X	
		PD.1.ES.16.c evaporation	X	
		PD.1.ES.16.d precipitation	X	
		PD.1.ES.17 Compare and contrast meteorological processes related to air masses, weather systems, and forecasting	X	
		PD.1.ES.18 Construct and interpret weather maps	X	
		PD.1.ES.19 Describe the cycling of materials and energy:	X	
		PD.1.ES.19.a nitrogen	X	
		PD.1.ES.19.b oxygen	X	
		PD.1.ES.19.c carbon	X	
		PD.1.ES.19.d phosphorous	X	
		PD.1.ES.19.e hydrological	X	
		PD.1.ES.19.f sulfur	X	
BD Biological Dynamics	BD.2 Students shall understand the biological dynamics of Earth.	BD.2.ES.1 Compare and contrast biomes	Ecology	Biomes
		BD.2.ES.2 Describe relationships within a community:	Populations	Understanding Populations
		BD.2.ES.2.a predation	Populations	Understanding Populations
		BD.2.ES.2.b competition	Populations	Understanding Populations
		BD.2.ES.2.c parasitism	Populations	Understanding Populations

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		BD.2.ES.2.d mutualism	Populations	Understanding Populations
		BD.2.ES.2.e commensalism	Populations	Understanding Populations
		BD.2.ES.3 Differentiate between primary and secondary succession	Ecology	How Ecosystems work
		BD.2.ES.4 Construct a trophic-level pyramid (energy level)	X	
		BD.2.ES.5 Construct a food chain	X	
		BD.2.ES.6 Diagram a food web	X	
		BD.2.ES.7 Compare and contrast food webs and food chains	Ecology	How Ecosystems work
		BD.2.ES.8 Describe biodiversity	X	
		BD.2.ES.9 Explain how limiting factors affect populations and ecosystems	Populations	Understanding Populations
		BD.2.ES.10 Describe the natural selection process in populations	Populations	Understanding Populations
SP Social Perspectives	SP.3 Students shall understand the impact of human activities on the environment.	SP.3.ES.1 Explain the reciprocal relationships between Earth's processes (natural disasters) and human activities	X	
		SP.3.ES.2 Investigate the relationships between human consumption of natural resources and the stewardship responsibility for reclamations including disposal of hazardous and non-hazardous waste	X	
		SP.3.ES.3 Explain common problems related to water quality:	Water, Air, and Land	Water
		SP.3.ES.3.a conservation	Water, Air, and Land	Water
		SP.3.ES.3.b usage	Water, Air, and Land	Water
		SP.3.ES.3.c supply	Water, Air, and Land	Water
		SP.3.ES.3.d treatment	Water, Air, and Land	Water
		SP.3.ES.3.e pollutants (point and non-point	Populations	Understanding Populations



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		sources)		
		SP.3.ES.4 Explain problems related to air quality:	Water, Air, and Land	Water
		SP.3.ES.4.a automobiles	Water, Air, and Land	Water
		SP.3.ES.4.b industry	Water, Air, and Land	Water
		SP.3.ES.4.c natural emissions	Water, Air, and Land	Water
		SP.3.ES.5 Evaluate the impact of different points of view on health, population, resource, and environmental issues:	X	
		SP.3.ES.5.a governmental	X	
		SP.3.ES.5.b economic	X	
		SP.3.ES.5.c societal	X	
		SP.3.ES.6 Research how political systems influence environmental decisions	X	
		SP.3.ES.7 Investigate which federal and state agencies have responsibility for environmental monitoring and action	X	
		SP.3.ES.8 Compare and contrast man-made environments and natural environments	X	
		SP.3.ES.9 Evaluate personal and societal benefits when examining health, population, resource, and environmental issues	X	
		SP.3.ES.10 Predict the long-term societal impact of specific health, population, resource, and environmental issues	X	
		SP.3.ES.11 Investigate the effect of public policy decisions on health, population, resource, and environmental issues	X	
		SP.3.ES.12 Explain the impact of factors such as birth rate, death rate, and migration rate on population changes	Populations	Understanding populations



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		SP.3.ES.13 Distinguish between developed and developing countries	Populations	The human population
NS Nature of Science	NS.4 Students shall use mathematics, science equipment, and technology as tools to communicate and solve environmental science problems.	NS.4.ES.1 Collect and analyze scientific data using appropriate mathematical calculations, figures and tables	X	
		NS.4.ES.2 Use appropriate equipment and technology as tools for solving problems (e.g., microscopes, centrifuges, flexible arm cameras, computer software and hardware)	X	
		NS.4.ES.3 Utilize technology to communicate research findings	X	
	NS.5 Students shall describe the connections between pure and applied science.	NS.5.ES.1 Compare and contrast environmental concepts in pure science and applied science	X	
		NS.5.ES.2 Explain why scientists should work within ethical parameters	X	
		NS.5.ES.3 Evaluate long-range plans concerning resource use and by-product disposal for environmental, economical and political impact	X	
		NS.5.ES.4 Explain how the cyclical relationship between science and technology results in reciprocal advancements in science and technology	X	
	NS.6 Students shall describe the various environmental careers and the training required for the selected career.	NS.6.ES.1 Research and evaluate science careers using the following criteria	X	
		NS.6.ES.1.a educational requirements	X	
		NS.6.ES.1.b salary	X	
		NS.6.ES.1.c availability of jobs	X	
			NS.6.ES.1.d working conditions	X