Arkansas CTE

Environmental Resources: Soil and Water: Grades 10, 11, 12

Adopted 2008

Environmental Concerns

1.1 Define terms

1. Match terms with definitions 1.1.1

1.2 Identify areas of environmental concern

1. Research each area of environmental concern (soil, water, wildlife, air, climate, wetlands, and waste management) 1.2.1

1.3 Discuss career opportunities relating to environmental science

1. Research a career in environmental resource management to determine educational requirements, working conditions, and salary 1.3.1

1.4 Identify FFA activities that support an interest in soil and water management

1. Participate in FFA activities related to environmental resources. 1.4.1

Safety in Environmental Resources

2.1 Define terms

1. Match terms to their definitions 2.1.1

2.2 Discuss the meaning and importance of safety and safe work with environmental resources

1. Relate examples of safety hazards associated with environmental resources. 2.2.1
2. Have students name examples of accidents that have occurred locally in environmental resources work 2.2.2

2.3 Identify hazards in environmental resources

1. Survey hazardous situations in local environmental resources facilities and prescribe the appropriate safety measures to be taken and propose ways of eliminating or reducing the risk of these hazards 2.3.1
2. Develop a list of practices to reduce risk when working with environmental resources 2.3.2

2.4 Describe the importance of personal safety in environmental resources

1. Identify and properly use appropriate personal protective equipment (PPE) with environmental resources 2.4.1
2. Calculate the cost of personal protective equipment (PPE) for an individual involved with environmental resources 2.4.2
3. Work together with others to promote safety in environmental resources 2.4.3
4. Take a test on environmental resources safety before beginning work 2.4.4

Soils

3.1 Define terms

1. Match terms to their definitions 3.1.1

3.2 Explain how soils are formed

1. Use a soil survey to explain the origin of local soils 3.2.1

3.3 List the components of soil (e.g., mineral, organic, water, air, life)

1. Give an oral report on the components of soil 3.3.1
2. Examine soil under a microscope 3.3.2

3.4 Discuss how soil texture is determined

1. Conduct a soil sedimentation test for different types of soil samples 3.4.1
2. Conduct a ribbon test to determine soil texture 3.4.2

3.5 Describe soil structure.

1. Determine the soil structure of several soil samples. 3.5.1

3.6 Label the layers found in the soil horizon (O, A, E, B, C, R)

1. Observe exposed soil to determine presence of layers 3.6.1

3.7 List the factors that contribute to soil erosion (e.g., wind, water)

1. Set up a erosion model 3.7.1
2. Take a field trip to eroded areas 3.7.2

3.8 Define the purpose and characteristics of land capability classes

1. Classify land areas around the school according to their capabilities 3.8.1
2. Use a soil survey to help determine land capability classes 3.8.2

3.9 List major soil conservation practices

1. Take a field trip to see different soil conservation practices 3.9.1

3.10 Explain how to interpret a soil test analysis

1. Interpret soil test analysis reports 3.10.1

3.11 Explain the movement of water into and through the soil profile

1. Dig a pit or visit a road cut to see mottling of poorly drained soil 3.11.1

Water

4.1 Define terms

1. Match terms to their definitions 4.1.1

4.2 Explain the importance of surface water and its major uses

1. Map out the hydrologic cycle 4.2.1

4.3 Discuss groundwater and the water table

1. Using a groundwater model, trace the pathways of water to the water table 4.3.1

4.4 Describe the process for testing ground water quality

1. Test water samples from the community 4.4.1
2. Identify problem areas in the community, using water samples 4.4.2

4.5 Describe the process for testing surface water quality

1. Test the quality of surface water using a test kit 4.5.1

4.6 Describe water conservation methods as related to irrigation, animal production, and human use

1. Develop a plan to conserve water used for irrigation, animal production, and human use 4.6.1

4.7 Discuss the purposes of dams and their effects on the environment

1. Research the various dam areas in the United States, and present your findings in a speech 4.7.1

Air

5.1 Define terms

1. Match terms to their definitions 5.1.1

5.2 Describe the kinds and sources of air pollution

1. Identify the sources of air pollution in your community 5.2.1
2. Choose one source of air pollution in the community, and present a paper on solving the problem 5.2.2

5.3 Discuss the influence of air pollution on the environment

1. Survey the area for sources of air pollution 5.3.1
2. Research the affects of air pollution on the environment, and present your findings in a speech 5.3.2

Wetlands

6.1 Define terms

1. Match terms to their definitions 6.1.1

6.2 Discuss the types of wetlands

1. Invite a wetlands expert to address the class on the value of wetlands 6.2.1
2. Identify wetland areas in your community 6.2.2

6.3 Explain the importance of wetlands

1. Research the importance of wetlands and give a brief report 6.3.1

6.4 Discuss the destruction of wetlands

1. Outline a method of wetland destruction and its ramifications to the environment 6.4.1

6.5 Discuss wetland conservation

1. Visit the Soil Conservation Service to discuss the various wetland conservation programs available to landowners 6.5.1

6.6 Discuss the construction of wetlands

1. Conduct Internet research on wetlands construction in Arkansas 6.6.1

Waste Management

7.1 Define terms

1. Match terms to their definitions 7.1.1

7.2 Explain the kinds and sources of wastewater

1. Tour a wastewater treatment facility 7.2.1
2. Take a tour of an animal production facility where wastewater is treated on site 7.2.2
3. Research Arkansas regulations pertaining the wastewater treatment 7.2.3

7.3 Discuss the kinds and sources of solid waste

1. Report on approved methods to dispose of poultry litter 7.3.1
2. Report on approved methods for the disposal of animal carcasses 7.3.2

7.4 Discuss the kinds and sources of hazardous waste

1. Identify potential sources of hazardous waste in the community 7.4.1
2. Research the laws of your community and state regarding hazardous waste 7.4.2

Biological Processes

8.1 Define terms

1. Match terms to their definitions 8.1.1

8.2 Discuss the importance of the nutrient cycles

1. Diagram nutrient cycles `8.2.1`

8.3 Explain the composting process and its value

1. Construct a compost bin or other system for composting organic matter `8.3.1`