Environmental Management

Environmental Management is a one-credit course that provides students with the opportunity to develop an understanding of the principles and practices of environmental management. Topics include career opportunities, safety, importance of natural resources, waste management, water quality, soil science, air quality, pesticide management and use, ecology, and energy conservation.

Content standards for this course are not intended to serve as the entire curriculum. Teachers are encouraged to expand the curriculum beyond the limits of these content standards to accommodate specific community interests and utilize local resources. This course encourages critical thinking, use of the scientific method, integration of technology, development of student leadership skills, and application of knowledge and skills related to practical questions and problems. Safety concepts are integrated into instruction to the maximum extent possible.

Career and technical student organizations are integral, co-curricular components of each career and technical education course. These organizations serve as a means to enhance classroom instruction while helping students develop leadership abilities, expand workplace-readiness skills, and broaden opportunities for personal and professional growth.

Career Opportunities

Students will:

1. Recognize career opportunities related to environmental stewardship.

Safety

2. Identify safety considerations required for working in environmental management.

Natural Resources

3. Explain the importance of conserving natural resources and the environment.

Waste Management

4. Describe methods of managing various types of waste.
   Examples: recycling, reusing, reducing
   - Describing factors to be considered in preparing a waste management plan
Water Quality

5. Describe properties of water that make it a universal solvent.
   - Describing uses of water in agricultural operations
     Examples: consumption, irrigation, cleaning, heating and cooling, transporting agricultural products

6. Identify sources of local drinking water.
   - Determining the quality of freshwater using chemical testing and bioassessment
   - Describing the use of chemicals and microorganisms in water treatment
   - Describing water conservation methods
   - Describing the process of underground water accumulation, including the formation of aquifers
   - Identifying major residential, industrial, and agricultural water consumers
   - Identifying principal uses of water

7. Identify reasons coastal waters serve as an important resource.
   Examples: economic stability, biodiversity, recreation
   - Classifying biota of estuaries, marshes, tidal pools, wetlands, beaches, and inlets
   - Comparing components of marine water to components of inland bodies of water

8. Describe factors to be considered in preparing a water conservation or management plan for groundwater and surface water resources.
   Examples: water availability, water quality, water source

9. Identify major contaminants in water resulting from natural phenomena, housing, industrial waste, and agricultural pollutants.
   - Describing the eutrophication of water by industrial effluents and agricultural run offs
   - Classifying sources of water pollution as point and nonpoint

Soil Science

10. Describe the composition of soil profiles and soil samples of varying climates.
    - Identifying various processes and activities that promote soil formation
      Examples: weathering, decomposition, deposition
    - Relating particle size to soil structure and type of sand, silt, or clay

11. Describe land use practices that promote sustainability and economic growth.
    Examples: no-till planting, crop rotation
    - Defining various types and sources of waste and their impact on the soil
      Examples: types—biodegradable and nonbiodegradable, organic, radioactive, nonradioactive;
      sources—pesticides, herbicides
    - Identifying ways to manage waste, including composting, recycling, reusing, and reclaiming
12. Describe agents of erosion, including moving water, gravity, glaciers, and wind.
   - Describing methods of preventing soil erosion
     Examples: planting vegetation, constructing terraces, providing barriers

**Air Quality**

13. Identify the impact of pollutants on the atmosphere.
   - Identifying layers of the atmosphere and the composition of air
   - Describing the formation of primary, secondary, and indoor air pollutants
   - Relating pollutants to smog and thermal inversions
   - Investigating the impact of air quality on the environment
   - Interpreting social, political, and economical influences on air quality

**Pesticide Management and Use**

14. Compare effects of various pesticides on the environment.

**Ecology**

15. Describe short- and long-term climatic conditions and their importance in agricultural production.

16. Identify the influence of human populations, technology, and cultural and industrial changes on the environment.
   - Describing the relationship between carrying capacity and population size

17. Identify positive and negative effects of human activities on biodiversity.
   - Identifying endangered and extinct species locally, regionally, and worldwide
   - Identifying causes for species extinction locally, regionally, and worldwide

18. Analyze agricultural activity for its impact on the ecosystems of Alabama.

**Energy Conservation**

19. Evaluate various fossil fuels for effectiveness as energy resources.
   - Describing the formation and use of nonrenewable fossil fuels
   - Identifying by-products of the combustion of fossil fuels, including particulates, mercury, sulfur dioxide, nitrogen dioxide, and carbon dioxide
   - Identifying chemical equations associated with the combustion of fossil fuels
   - Describing benefits of abundant, affordable energy to mankind
   - Identifying effects of fossil fuel by-products on the environment, including ozone depletion, formation of acid rain, brown haze, greenhouse gases, and concentration of particulates in heavy metals
20. Evaluate other sources of energy for effectiveness as alternatives to fossil fuels.
   - Comparing nuclear fission and nuclear fusion reactions in the production of energy
   - Comparing energy production and waste output in generating nuclear energy
   - Differentiating among renewable and nonrenewable energy resources
   - Identifying local energy resources
     Examples: landfill gas, wind, water, sun
   - Identifying ways the law of conservation of energy relates to fuel consumption
     Examples: development of hybrid cars, construction of energy-efficient homes