

STRANDS AND STANDARDS

NATURAL RESOURCE SCIENCE 2



Course Description

Students will develop knowledge and skills related to the biological, environmental, and economic importance of renewable natural resources. Forest and range products and their benefits are included. Field and laboratory experiences will be emphasized.

Intended Grade Level	10-12
Units of Credit	1.0
Core Code	30.03.00.00.010
Concurrent Enrollment Core Code	
Prerequisite	Natural Resource Science 1
Skill Certification Test Number	173
Test Weight	1.0
License Type	CTE and/or Secondary Education 6-12
Required Endorsement(s)	
Endorsement 1	Agriculture (CTE/General)
Endorsement 2	Natural Resource Management

STRAND 1

Students will develop personal, leadership, and career skills through FFA participation.

Standard 1

Assess the role of FFA participation in developing personal and leadership skills.

- Identify important personal skills and the strategies to use in developing the skills.
- Identify important leadership skills and the role of FFA participation in developing the skills.

Standard 2

Assess the role of FFA participation in developing career skills.

- List and describe proficiency awards appropriate for natural resources.
- List and describe career development events appropriate for natural resources.
- Relate the importance of supervised agricultural experience to FFA achievement.
- Utilize FFA and supervised agricultural experience participation to gain advanced degrees of FFA membership.

Performance Objective

- Attend an FFA meeting

STRAND 2

Students will explain the maintenance and expansion of supervised agricultural experience (SAE) programs in agricultural education

Standard 1

Maintain and use SAE records.

- Explain how SAE records are maintained from year to year.
- Explain how to summarize and analyze SAE records.

Standard 2

Devise long-range plans for expanding SAE programs.

- Evaluate the overall quality of a current SAE, and determine how to make it more productive or profitable.
- Explain factors that should be considered in expanding an SAE program.
- Explain how placement and ownership SAE programs may be expanded.

Performance Objective

- Develop short and long range SAE goals.
- In an approved record book, record all transactions and activities on a SAE.
- Develop short and long range leadership and personal development goals.

STRAND 3

Students will use effective methods and venues to communicate natural resource processes to the public.

Standard 1

Communicate natural resource information to the public.

- Describe the characteristics and importance of active and passive listening.
- Demonstrate public speaking skills.
- Read, comprehend, and interpret technical materials/publications.
- Produce a technical report/research paper.
- Identify ways in which a message regarding natural resources may be communicated to the public.
- Design and construct a display that communicates a natural resource topic.
- Prepare and present a natural resources issues forum for the local community.

Performance Objective

- Demonstrate public speaking skills.

STRAND 4

Students will explain interrelationships between natural resources and humans in managing natural environments.

Standard 1

Identify and evaluate natural resources.

- Select and assess a natural resource issue with regional/local impact; research its history and discuss its impact.
- Explain the effects and/or trade-off of population growth, greater energy consumption, and increased technology and development on natural resources and the environment.

Standard 2

Examine the relationship between natural resources and society, including conflict management.

- Assess the responsibility of individuals in stewardship of the environment.
- Describe procedures and laws for public involvement in natural resource management.
- Examine the principles of risk assessment and how they are applied to decision-making and adaptive management.
- Describe the effects of technology and biotechnology on the environment.
- Research and debate one or more current issues related to the conservation or preservation of natural resources.
- Identify issues involving mitigation of natural resources.

Standard 3

Compare and contrast the impact of conventional and alternative energy sources on the environment.

- Identify conventional and alternative energy sources.
- Identify advantages and disadvantages of conventional and alternative energy sources.
- Compare and contrast various energy resources in terms of their reserves, uses, and impacts on the environment.

Performance Objective

- Participate in a conflict management activity.

STRAND 5

Students will explain practices in natural resource management.

Standard 1

Apply soil science principles to natural resource management.

- Describe soil degradation.
- Identify causes of soil erosion.
- Apply management practices to mitigate soil erosion.

Standard 2

Relate the function of watersheds and water resources to natural resources.

- Describe properties of watersheds, and identify the boundaries of local watersheds.
- Compare watershed management methods.
- Examine the impact of watershed management on local communities.
- Explain the potential water-holding/runoff capacity of a watershed.
- Identify water sources and quality standards.
- Conduct water quality tests.
- Identify sources of groundwater contamination.
- Describe the functions of wetlands, and differentiate types of wetlands.
- Explain the importance of wetland management, creation, enhancement, and restoration programs.

Standard 3

Analyze wildlife/aquatic resources and management.

- Describe characteristics of a healthy wildlife habitat.
- Explain methods of wildlife habitat improvement.
- Identify wildlife species that can be sustainably harvested.
- Describe techniques used in managing wildlife.
- Identify characteristics of a healthy aquatic habitat.
- Describe techniques used in managing fish populations.
- Identify and manage fish diseases.

Standard 4

Examine forest resources and management.

- Identify local forestry species by common and scientific names.
- Describe forest ecology, and identify characteristics of a healthy forest.
- Recognize the importance of forests.
- Describe the growth and decline of forest trees.
- Identify ways in which forest stands may be improved.
- Measure trees and timber stands.
- Explain the role of fire in forest management.
- Examine reforestation practices.
- Identify forest products and uses.
- Define urban forestry.

Standard 5

Examine mineral resources and management.

- Identify local mineral resources
- Describe the importance of mineral resources to society.
- Explain the various practices for obtaining mineral resources.
- Describe the impact of mining practices on the environment.
- Identify processes for reclaiming areas where minerals have been extracted.

Standard 6

Explain the management of natural resources for recreational purposes.

- Identify natural resource characteristics desirable for recreational purposes.
- Identify outdoor recreational enterprises.
- Describe natural resource management techniques for improving recreation opportunities.
- Compare various recreational uses of the region.

Standard 7

Explain inventory and monitoring methods.

- Identify the components of a monitoring plan.
- Compare and contrast the various inventory/sampling methodologies (e.g., population estimation).
- Develop a basic plan for monitoring a natural resource project.

Performance Objective

- Compare and contrast various energy resources, their reserves, use and impacts (i.e. solar, nuclear, hydro, geothermal, wind, waves, coal, gas, etc).
- Investigate the economics of recreational uses in the region.
- Compare management techniques for recreational uses in the region.
- Compare forest products, their ownership, and their economic impact on the region: (i.e. timber, recreation, wildlife, range/grazing, urban forestry, small woodlot owners etc.
- Develop a basic plan for monitoring a natural resource project.
- Classify and identify indigenous wildlife species and their habitat needs.
- Monitor wildlife habitat quality and quantity.
- Assess agriculture’s impact on the environment through waste generation (i.e., animal waste, pesticide residue, fertilizer runoff, sedimentation/erosion, odors/dust, etc).

STRAND 6

Students will apply basic economic principles in natural resource business and management.

Standard 1

Apply basic economic principles in natural resource business and management.

- Monitor monthly financial statements.
- Apply tax strategies and estate planning to natural resource management.
- Explain how economic principles contribute to land management through conservation easements and land swaps.
- Evaluate the economic impact of natural resources on a community.

Skill Certificate Test Points by Strand

Test Name	Test #	Number of Test Points by Strand										Total Points	Total Questions
		1	2	3	4	5	6	7	8	9	10		
Natural Resource Science 2	173		1	1	15	36	3					56	56