

## Fundamentals of Natural Resources Syllabus

### RCAS Policies/Procedures

Students will be required to follow all RCAS policies and procedures. To view the RCAS High School Student Handbook, click [handbook](#).

### Course Description

The Natural Resources and Ecology course provides students a variety of experiences in the fields of natural resources and ecology. Students will explore hands-on projects and activities while studying topics such as land use, water quality, stewardship, and environmental agencies. Study of the natural world including biomes, land, air, water, energy, use and care as well as a focus on issues surrounding man's interaction with the Earth will be addressed in this course.

Students will select an ecosystem to study throughout the course and apply principles of natural resources and ecology from each unit of study to that ecosystem. Students will be able to demonstrate these skills through classroom-based experiences, supervised agricultural experience (SAE), and extra-curricular opportunities in FFA.

### Grading

Grading: All grades are based on a 10 point grading scale.

Grading Scale: (100% - 90% A) (89% - 80% B) (79% - 70% C) (69% - 60% D) (59% - 0% F)

**Grades will be based on student learning evaluation using performance objectives, rubrics, check for understanding, labs & student notebooks with daily work.**

### Textbook

### Reading

### Optional Reading

### Instructional Resources

Canvas

CASE (Curriculum for Agricultural Science Education) Natural Resources and Ecology (NRE)

### Essential Questions

- 1.1.1 Individuals have different perceptions about natural resources and ecology.
- 1.1.2 Organized record keeping is an important skill for people working in the fields of natural resources and ecology.

- 1.1.3 The perception of conservation, preservation, and exploitation regarding the use of natural resources influence natural resource management decisions.
- 1.1.4 Career opportunities exist in natural resources and ecology for all levels of education in areas of study including conservation, education, management, and recreation.
- 1.2.1 A biome, classified by the predominant vegetation, is primarily determined by climate, altitude, and latitude.
- 1.2.2 The result of regular observations of the natural world, accurate and useful field notes are a tool in the scientific study of the natural world.
- 1.2.3 The diversity of an ecosystem includes both the living and non-living components.
- 2.1.1 Soil formation factors, including climate and parent material, influence soil types and uses.
- 2.1.2 Soil texture and structure influence soil properties and usability.
- 2.1.3 Soil is a natural filter and can collect nutrients and other materials from water.
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- 3.1.1 Solar energy drives the hydrologic cycle, resulting in water evaporating into the atmosphere and returning to the surface of the Earth in different forms.
- 3.1.2 Water is converted into a series of forms as it moves through the environment over time.
- 3.1.3 Lakes, rivers, and oceans are three significant types of bodies of water that have characteristics influenced by climate, topography, and organisms.
- 3.2.1 The Water Quality Index uses a series of tests, such as temperature, dissolved oxygen, pH, turbidity, and nitrates, to indicate the overall quality of a body of water.
- 3.2.2 Water quality determines potential water uses, such as for drinking, irrigation for agriculture, industrial use, and recreational use.
- 3.2.3 Environmental conditions and human activities influence water quality.
- 3.2.4 The movement of water through watersheds and soil can alter the quality of water.
- 4.1.1 The atmosphere consists of various levels defined by distinct characteristics, such as density, temperature, and chemical composition.
- 4.1.2 Gases found in the atmosphere, such as oxygen and nitrogen, take different forms as they move through a biogeochemical cycle.
- 4.1.3 An essential function of the atmosphere is the natural warming of the surface of the Earth.
- 4.2.1 The measurement of the gases and particulates present at various levels determines air quality.
- 4.2.2 Natural occurring processes and human activity influence air quality.
- 4.2.3 The greenhouse effect theory explains the potential reasons and causes of global warming.
- Lesson 5.1 The Energy of Life
- 5.1.1 Energy and nutrients flow through trophic levels within an ecosystem.
- 5.1.2 The geographic area of an ecosystem influences the complexity and type of organisms present.

- 5.1.3 The availability of natural resources determines the carrying capacity of a given species in an ecosystem.
- 6.1.1 Biodiversity refers to the variety of living components in an ecosystem.
- 6.1.2 Plants are scientifically identified using taxonomy and various classification systems.
- 6.1.3 Vegetation type present in an ecosystem is influenced by the environment and the activity of animals and humans.
- 6.1.4 Plant populations shift in response to changes in the environment.
- 6.2.1 Wildlife requires habitat, including food, water, shelter, and space, suited to their needs to thrive in a community.
- 6.2.2 Organisms use natural processes to adapt to their environments and increase their chances of survival.
- 6.2.3 Human pressures of populations cause artificial selection within a population.
- 6.2.4 Various objectives influence the management of wildlife species.
- 6.2.5 Wildlife management includes improving habitat for a focal species.
- 7.1.1 Sustainable agriculture practices include the efficient use of non-renewable and on-farm resources and, where appropriate, integrate natural biological cycles.
- 7.1.2 Agricultural stewardship balances agriculture productivity and profitability while conserving natural resources.
- 7.2.1 Effective forest management requires identifying goals and proposed uses of the forest, such as aesthetics, recreation, urban values, water, wilderness, wildlife, and wood products.
- 7.2.2 Forest management techniques include timber extraction, planting, and replanting of various species, cutting roads and pathways through forests, and fire management.
- 7.3.1 Essential mineral resources are available due to many different practices and methods.
- 7.3.2 Natural resource mining has positive and negative impacts on the environment and human populations.
- 8.1.1 Human populations and their food, fiber, and fuel needs impact the natural environment.
- 8.1.2 Energy is available from diverse renewable and nonrenewable sources.
- 8.1.3 Managing waste impacts society and has environmental costs and benefits.
- 8.1.4 Proper waste management is essential for healthy ecosystems.
- 8.2.1 Human recreational activities impact the natural environment and native species.
- 8.2.2 Protected natural spaces, such as National Parks and Scenic areas, have been designated to preserve landmarks as well as native flora and fauna.
- 8.2.3 Recreational use of natural resource areas requires the development of skills to ensure the individual's safety while protecting the integrity of the natural resource.
- 9.1.1 Environmental policies and regulations, such as the Endangered Species Act and wilderness protection designations, have been established to protect the environment for future generations of wildlife, vegetation, and human use.
- 9.1.2 National conservation practices have shifted over time due to changes in environmental perceptions.
- 9.1.3 Many organizations influence the protection of species and the environment.
- 9.2.1 Balancing the human population's needs and demands for food, fiber, fuel with maintaining environmental quality is a complex social issue.
- 9.2.2 Ecosystems change based upon management decisions over time.

## Essential Learning Intentions

1. Agriculture, food, and natural resources systems produce the food, fiber, and fuel that are essential to daily life as well as contribute to the nation's economic wealth.
2. Individuals who pursue a program of study in agricultural education will benefit from leadership development, personal growth, and career exploration.
3. Agriculture is a science that contributes to the development, improvement, and sustainability of living things.
4. Agricultural education establishes a relevant setting for the application of mathematical practices and principles.
5. Effective interpersonal communication skills facilitate group processes and aid in solving complex problems and the achievement of common goals.
6. Reading and writing interpretation skills are necessary for educational and professional development.
7. Safety is an attitude of personal responsibility that must be practiced in the agricultural classroom, laboratory, shop, greenhouse, and facilities.
8. Inquiry activities are important in the practice of scientific processes and in the world of research.
9. The use of technology and computer applications is critical to modern agricultural practices.
10. Consideration of the ethical, environmental, social, and economic impacts of agricultural practices is essential to being a responsible, involved citizen.
11. Individuals involved with the processes of agricultural production must perform specific technical skills proficiently.
12. Critical thinking involves using a variety of problem-solving techniques in real-life contexts.