

CURRICULUM MAP
ENVIRONMENTAL SCIENCE

August/September	October	November	December
<p>FORESTRY →</p> <p>Earth and Space</p> <p>11th - grade</p> <p>13. Explain how human behavior affects the basic processes of natural ecosystems and the quality of the atmosphere, hydrosphere and lithosphere.</p> <p>12th – grade</p> <p>6. Describe how scientists estimate how much of a given resource is available on Earth.</p>	<p>→</p>	<p>WILDLIFE →</p> <p>Life Science</p> <p>11th – Grade</p> <p>12. Recognize that ecosystems change when significant climate changes occur or when one or more new species appear as a result of immigration or speciation.</p> <p>12th - Grade</p> <p>10. Explain additional components of the evolution theory, including genetic drift, immigration, emigration and mutation.</p>	<p>→</p> <p>10/24/2006</p>

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January	February	March/April	May
<p>AQUATIC ECOLOGY →</p> <p>Earth and Space 11th - Grade</p> <p>11. Analyze how materials from human societies (e.g., radioactive waste and air pollution) affect both physical and chemical cycles of Earth.</p> <p>12. Explain ways in which humans have had a major effect on other species (e.g., the influence of humans on other organisms occurs through land use, which decreases space available to other species and pollution, which changes the chemical composition of air, soil and water).</p> <p>Physical Science 11th - Grade</p> <p>3. Describe real world examples showing that all energy transformations tend toward disorganized states (e.g., fossil fuel combustion, food pyramids and electrical use).</p>	<p>→</p>	<p>SOILS/LAND USE Life Science 11th - Grade</p> <p>4. Examine the contributing factors of human population growth that impact natural systems such as levels of education, children in the labor force, education and employment of women, infant mortality rates, costs of raising children, birth control methods, and cultural norms.</p> <p>5. Investigate the impact on the structure and stability of ecosystems due to changes in their biotic and abiotic components as a result of human activity.</p>	<p>ENVIRONMENTAL ISSUES</p> <p>Science and Technology</p> <p>11th – Grade</p> <p>5. Investigate that all fuels (e.g., fossil, solar and nuclear) have advantages and disadvantages; therefore society must consider the trade-offs among them (e.g., economic costs and environmental impact).</p> <p>6. Research sources of energy beyond traditional fuels and the advantages, disadvantages and trade-offs society must consider when using alternative sources (e.g., biomass, solar, hybrid engines, wind and fuel cells).</p> <p>10/24/2006</p>

EMBEDDED THROUGHOUT THE YEAR

Earth and Space Science 11th Grade

14. Conclude that Earth has finite resources and explain that humans deplete some resources faster than they can be renewed.
15. Use historical examples to show how new ideas are limited by the context in which they are conceived; are often rejected by the social establishment; sometimes spring from unexpected findings; and usually grow slowly through contributions from many different investigators (e.g., global warming, Heliocentric Theory and Theory of Continental Drift).
16. Describe advances in Earth and space science that have important long-lasting effects on science and society (e.g., global warming, Heliocentric Theory and Plate Tectonics Theory).

Science and Technology 11th Grade

1. Identify that science and technology are essential social enterprises but alone they can only indicate what can happen, not what should happen. Realize the latter involves human decisions about the use of knowledge.
2. Predict how decisions regarding the implementation of technologies involve the weighing of trade-offs between predicted positive and negative effects on the environment and/or humans.
4. Explain why basic concepts and principles of science and technology should be a part of active debate about the economics, policies, politics and ethics of various science-related and technology-related challenges.

Scientific Inquiry 11th Grade

1. Formulate testable hypotheses. Develop and explain the appropriate procedures, controls and variables (dependent and independent) in scientific experimentation.
2. Evaluate assumptions that have been used in reaching scientific conclusions.
3. Design and carry out scientific inquiry (investigation), communicate and critique results through peer review.
4. Explain why the methods of an investigation are based on the questions being asked.
5. Summarize data and construct a reasonable argument based on those data and other known information.

Life Science 11th Grade

6. Predict some possible impacts on an ecosystem with the introduction of a non-native species.
7. Show how populations can increase through linear or exponential growth with corresponding effects on resource use and environmental pollution.
8. Recognize that populations can reach or temporarily exceed the carrying capacity of a given environment. Show that the limitation is not just the availability of space but the number of organisms in relation to resources and the capacity of earth systems to support life.
9. Give examples of how human activity can accelerate rates of natural change and can have unforeseen consequences.
10. Explain how environmental factors can influence heredity or development of organisms.
11. Investigate issues of environmental quality at local, regional, national and global levels such as population growth, resource use, population distribution, over consumption, the capacity of technology to solve problems, poverty, the role of economics, politics and different ways humans view the earth.

12th Grade

7. Relate diversity and adaptation to structures and functions of living organisms at various levels of organization.
8. Based on the structure and stability of ecosystems and their nonliving components, predict the biotic and abiotic changes in such systems when disturbed (e.g. introduction of non-native species, climatic change, etc.).
9. Explain why and how living systems require a continuous input of energy to maintain their chemical and physical organization. Explain that with death and the cessation of energy input, living systems rapidly disintegrate toward more disorganized states.

10/24/2006