

General Course Information

Course Name: Ecology	
Department: Science	Grade Level(s): 11 - 12
Duration/Credits: 1 semester/0.5 credit	Prerequisites: None
BOE Approval Date: December 2022	Course Code:
Course Description:	
<p>This course is the study of the wise use of our natural resources including soil, water, air, forest, wildlife, energy, and other resources. Emphasis is placed on the nature of the resource, methods of analysis, environmental concerns, and sustaining our natural resources. Additional focus is put on natural ecosystems and relationships between organisms/different environments on all levels of ecology. Both of these aspects are applied to problems in nature, and how we can sustain the environment.</p>	
Course Rationale:	
<p>In a world filled with the products of scientific inquiry, scientific literacy is a necessity for everyone in order to use scientific information to make wise choices. Today, the job market demands advanced skills, requiring people to be able to learn new skills, use reason, think creatively, make decisions, and solve problems. An understanding of science and the processes of science contribute in an essential way to these skills.</p>	
Course Objectives:	
<ol style="list-style-type: none">1. The student will read about and discuss the impact of present global resource consumption.2. The student will verbally discuss the benefits and problems between the opposing philosophies of global conservation versus open unlimited consumption.3. The student will define and compare in writing the importance of using renewable resources to nonrenewable resources.4. The student will research current socio-environmental issues emphasizing the importance of building a sustainable future.5. The student will understand all different scopes of ecology, ranging from organism to biosphere.6. The student will be able to identify key relationships in an ecosystem and how this affects larger areas of life.7. The student will model and show how changes in an environment affects	

every organism living there.

8. The student will be able to apply this information and model different ways of solving or helping the sustaining of the natural world.

Standards Alignment:

9-12.LS1.A.2 Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms

9-12.LS2.A.1 Explain how various biotic and abiotic factors affect the carrying capacity and biodiversity of an ecosystem using mathematical and/or computational representations. [Clarification Statement: Examples of biotic factors could include relationships among individual

9-12.LS2.B.1 Construct and revise an explanation based on evidence that the processes of photosynthesis, chemosynthesis, and aerobic and anaerobic respiration are responsible for the cycling of matter and flow of energy through ecosystems and that environmental conditions restrict which reactions can occur

9-12.LS2.B.2 Communicate the pattern of the cycling of matter and the flow of energy among trophic levels in an ecosystem

9-12.LS2.B.3 Use a model that illustrates the roles of photosynthesis, cellular respiration, decomposition, and combustion to explain the cycling of carbon in its various forms among the biosphere, atmosphere, hydrosphere, and geosphere

9-12.LS2.C.1 Evaluate the claims, evidence, and reasoning that the interactions in ecosystems maintain relatively consistent populations of species while conditions remain stable, but changing conditions may result in new ecosystem dynamics

9-12.LS2.C.2 Design, evaluate, and/or refine solutions that positively impact the environment and biodiversity

9-12.LS3.B.1 Compare and contrast asexual and sexual reproduction with regard to genetic information and variation in offspring

9-12.LS3.B.4 Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population