Environmental Systems explores the biological, physical, and sociological principles related to the environment in which organisms live on Earth, the biosphere. Course topics include natural systems on Earth, biogeochemical cycles, the nature of matter and energy, the flow of matter and energy through living systems, populations, communities, ecosystems, ecological pyramids, renewable and non-renewable natural resources, land use, biodiversity, pollution, conservation, sustainability, and human impacts on the environment.

The course provides students with opportunities to learn and practice scientific skills within the context of relevant scientific questions. Scientific inquiry skills are embedded in the direct instruction, wherein students learn to ask scientific questions, deconstruct claims, form and test hypotheses, and use logic and evidence to draw conclusions about the concepts. Case studies of current environmental challenges introduce each content lesson and acquaint students with real-life environmental issues, debates, and solutions. Lab activities reinforce critical thinking, writing, and communication skills and help students develop a deeper understanding of the nature of science. Virtual Lab activities enable students to engage in investigations that require long periods of observation at remote locations and to explore simulations that enable environmental scientists to test predictions. Throughout this course, students are given an opportunity to understand how biology, earth science, and physical science are applied to the study of the environment and how technology and engineering are contributing solutions for studying and creating a sustainable biosphere.

This course is built to the TEKS Environmental Systems standards.

Length: Two Semesters

Unit 1: Introduction to Environmental Science

- What Is Science?
- Science and the Environment
- Doing Science: Introduction to Environmental Science
- Introduction to Environmental Science Wrap-Up

Unit 2: Earth's Physical Systems

- The Hydrosphere
- The Lithosphere
- The Atmosphere
- Doing Science: Earth's Physical Systems
- Earth's Physical Systems Wrap-Up

Unit 3: The Biosphere

- Nature of the Biosphere
- Matter and Energy in the Biosphere

- Ecosystems and Biomes
- Doing Science: The Biosphere
- The Biosphere Wrap-Up

Unit 4: Ecology

- Populations
- Communities
- Changes in Ecosystems
- Doing Science: Ecology
- Ecology Wrap-Up

Unit 5: Semester 1 Wrap-Up

- Semester 1 Wrap-Up

Unit 6: Humans and the Environment

- Human Societies
- Earth's Natural Resources
- Land Use and Its Effects
- Doing Science: Humans and the Environment
- Humans and the Environment Wrap-Up

Unit 7: Environmental Challenges

- Resource Availability
- Pollution and Waste Management
- Environmental Change
- Doing Science: Environmental Challenges
- Environmental Challenges Wrap-Up

Unit 8: Politics and the Environment

- The Concept of the Commons
- National Environmental Policies
- Global Environmental Policies
- Doing Science: Politics and the Environment
- Politics and the Environment Wrap-Up

Unit 9: Sustainability for the Future

- The Global Community
- Sustainable Practices
- Doing Science: Sustainability for the Future
- Sustainability for the Future Wrap-Up

Unit 10: Semester 2 Wrap-Up

- Semester 2 Wrap-Up