

Department: Science

Course Name: Advanced Placement Environmental Science

Course Description:

AP Environmental Science is a comprehensive survey course that emphasizes the interconnectedness of the Earth's systems and resources. Using ecology as a springboard, students study the flow of resources through the hierarchy of living organisms and their return to abiotic form. Soil, water, air, and populations are examined as resources that change over time. Human population growth and development impact the environment at a changing rate and scale. Students will analyze environmental problems, both natural and human-made. Developing methods that are sustainable for human health and population growth will be key to our survival. Pre-requisites for this course include a chemistry or physics class. Grades from entry-level course(s) should be B+ or better in General Physics, General Chemistry, or Oceans. Grades in Honors Chemistry or Honors Physics should be at least B level or better. At least one field trip may have an additional cost. These fees will be less than \$100 and will be collected when we have a field trip that has additional costs.

Content:

Scientific method-inquiry labs; design their own labs; design and engage in field studies

General ecology

Ecosystems

Population and community ecology

Populations: primary productivity, forest populations

Evolution/biogeography

Biodiversity as a resource; evolution, extinction

Terrestrial ecology

Forest ecology; management and land use

Aquatic ecology and biodiversity; freshwater, marine, and coastal ecosystems

Soil-basis soil science

Agriculture and biotechnology

Food resources

Energy use:

fossil fuels and other geologic resources, conventional alternatives; new renewable alternatives

Water quality; water as a resource

Water pollution

Human population dynamics

Air as a resource

Climate change; global change

Environmental regulations and laws; environmental policy

Sustainable urban development

Skills:

Utilize a learning management system for accessing content, assignments, and assignment submissions.

Collect data using some basic college field methods and some methods specific to environmental science

Analyze data using statistical tests, by hand or with a statistical package, and with spreadsheets

Graph or chart data with a spreadsheet application

Utilize a variety of lab techniques

Identify variables, create methods, analyze, and draw conclusions from experiments they design
Organize information to create flow charts or other graphic representations, both on paper and student created computer simulations or models
Create presentations using a variety of technological applications

Text and Resources: A Friedland and Relyea, R., Environment Science for the AP Course (4th AP edition, 2023) W. H. Freeman and Company, Boston.

Methods of Instruction:

Project based learning
Analyze data using statistical tests, by hand or in Excel
Field studies
Class discussion with emphasis on integrating and analyzing data both face to face or on Google docs or Zoom
Laboratory experiments, inquiry and a few standard procedures used by environmental scientists
Data analysis with computer graphing and computer apps for statistical analysis
Lecture with focus on developing critical thinking skills utilizing interactive presentation application
Demonstrations illustrating methods of experimentation
Computer simulations in spreadsheets
Collaboration with interactive sharing application

Methods of Evaluation:

Laboratory reports
Critical thinking essays explaining environmental concepts and processes
Proposing a solution for an environmental problem and supporting your idea with evidence
Projects
Field reports
Tests on paper or online assessment application
Quizzes on paper or online assessment application

Field Trip Fee: \$100