Virtual AP and Electives Fair 2021

Dr. Gerald Pollack

About Me

- 3rd year at Chattahoochee High School
- 12th year teaching (previously at college level)
- BS in Geology
- MS in Geological Sciences
- PhD in Chemistry with emphasis in Geology

- Two kids: Riley (12) and Spencer (7)

About the course

- Lectures geared towards understanding major concepts related to Sustainability
- Activities
  - Exploration along Nature Trail / Cross County Trail / Creek
  - Growing plants in the Greenhouse
- Labs

About the AP Environmental Science Course

The AP Environmental Science course is designed to engage students with the scientific principles, concepts, and methodologies required to understand the interrelationships within the natural world. The course requires that students identify and analyze natural and human-made environmental problems, evaluate the relative risks associated with these problems, and examine alternative solutions for resolving or preventing them. Environmental science is interdisciplinary, embracing topics from geology, biology, environmental studies, environmental science, chemistry, and geography.

About the AP Environmental Science Course

Prerequisites

Students should have completed two years of high school laboratory science—one year of life science and one year of physical science (e.g., a year of biology and a year of chemistry). Due to the quantitative analysis required in the course, students should also have taken at least one year of algebra. Also desirable (but not necessary) is a course in earth science.

About the AP Environmental Science Course

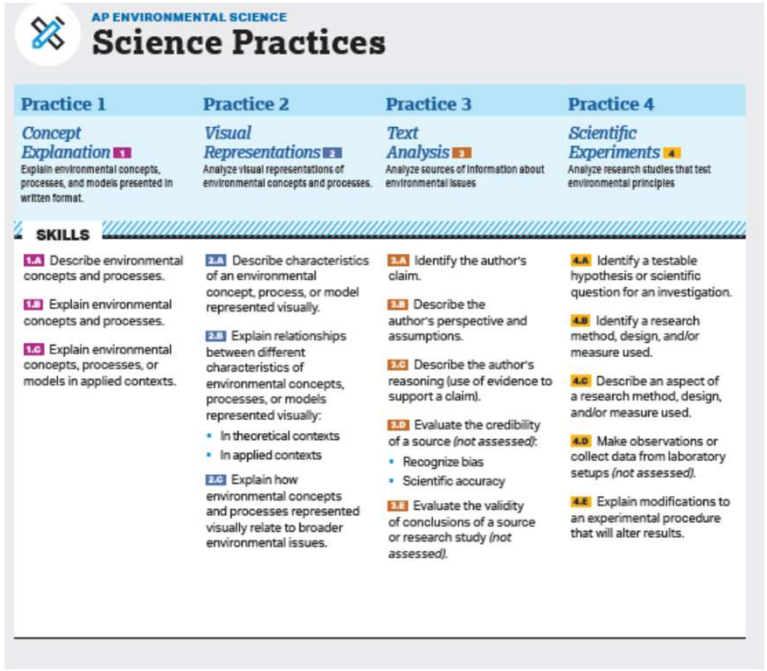
College Course Equivalent

The AP Environmental Science course is designed to be the equivalent of a one-semester, introductory college course in environmental science.

Lab Requirement

Although there are no specific AP Environmental Science labs or field investigations required for the course, it is required that students have the opportunity to spend a minimum of 25% of instructional time engaged in hands-on, inquiry-based laboratory and/or fieldwork investigations.

About the AP Environmental Science Course



AP ENVIRONMENTAL SCIENCE

Science Practices

Practice 1	Practice 2	Practice 3	Practice 4
Concept Explanation 1	*Visual Representations* 2	*Text Analysis* 3	*Scientific Experiments* 4
Explain environmental concepts, processes, and models presented in written format.	Analyze visual representations of environmental concepts and processes.	Analyze sources of information about environmental issues	Analyze research studies that test environmental principles

SKILLS

1.A Describe environmental concepts and processes.	2.A Describe characteristics of an environmental concept, process, or model represented visually.	3.A Identify the author's claim.	4.A Identify a testable hypothesis or scientific question for an investigation.
1.B Explain environmental concepts and processes.	2.B Explain relationships between different characteristics of environmental concepts, processes, or models represented visually: • In theoretical contexts • In applied contexts	3.B Describe the author's perspective and assumptions.	4.B Identify a research method, design, and/or measure used.
1.C Explain environmental concepts, processes, or models in applied contexts.	2.C Explain how environmental concepts and processes represented visually relate to broader environmental issues.	3.C Describe the author's reasoning (use of evidence to support a claim).	4.C Describe an aspect of a research method, design, and/or measure used.
		3.D Evaluate the credibility of a source *(not assessed)*: • Recognize bias • Scientific accuracy	4.D Make observations or collect data from laboratory setups *(not assessed)*.
		3.E Evaluate the validity of conclusions of a source or research study *(not assessed)*.	4.E Explain modifications to an experimental procedure that will alter results.

About the AP Environmental Science Course

AP ENVIRONMENTAL SCIENCE

Science Practices *(cont'd)*

Practice 5	Practice 6	Practice 7
Data Analysis 5 Analyze and interpret quantitative data represented in tables, charts, and graphs	***Mathematical Routines*** 6 Apply quantitative methods to address environmental concepts	***Environmental Solutions*** 7 Propose and justify solutions to environmental problems
5.A Describe patterns or trends in data.	6.A Determine an approach or method aligned with the problem to be solved.	7.A Describe environmental problems.
5.B Describe relationships among variables in data represented.	6.B Apply appropriate mathematical relationships to solve a problem, with work shown (e.g., dimensional analysis).	7.B Describe potential responses or approaches to environmental problems.
5.C Explain patterns and trends in data to draw conclusions.	6.C Calculate an accurate numeric answer with appropriate units.	7.C Describe disadvantages, advantages, or unintended consequences for potential solutions.
5.D Interpret experimental data and results in relation to a given hypothesis.		7.D Use data and evidence to support a potential solution.
5.E Explain what the data implies or illustrates about environmental issues.		7.E Make a claim that proposes a solution to an environmental problem in an applied context.
		7.F Justify a proposed solution, by explaining potential advantages.

About the AP Environmental Science Course

Big Ideas	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6	Unit 7	Unit 8	Unit 9
	The Living World: Ecosystems	The Living World: Biodiversity	Populations	Earth Systems and Resources	Land and Water Use	Energy Resources and Consumption	Atmospheric Pollution	Aquatic and Terrestrial Pollution	Global Change
Energy Transfer ENE	✓			✓		✓			
Interactions Between Earth Systems EAT	✓	✓	✓	✓					
Interactions Between Different Species and the Environment HUM			✓		✓			✓	✓
Sustainability STB					✓		✓	✓	✓

About the AP Environmental Science Course

Big Ideas

The big ideas serve as the foundation of the course and allow students to create meaningful connections among concepts. They are often overarching concepts or themes that become threads that run throughout the course. Revisiting the big ideas and applying them in a variety of contexts allows students to develop deeper conceptual understanding. Below are the big ideas of the course and a brief description of each.

BIG IDEA 1: ENERGY TRANSFER (ENG)
Energy conversions underlie all ecological processes. Energy cannot be created; it must come from somewhere. As energy flows through systems, at each step, more of it becomes unusable.

BIG IDEA 2: INTERACTIONS BETWEEN EARTH SYSTEMS (ERT)
The Earth is one interconnected system. Natural systems change over time and space. Biogeochemical systems vary in ability to recover from disturbances.

BIG IDEA 3: INTERACTIONS BETWEEN DIFFERENT SPECIES AND THE ENVIRONMENT (EIN)
Humans alter natural systems and have had an impact on the environment for millions of years. Technology and population growth have enabled humans to increase both the rate and scale of their impact on the environment.

BIG IDEA 4: SUSTAINABILITY (STB)
Human survival depends on developing practices that will achieve sustainable systems. A suitable combination of conservation and development is required. The management of resources is essential. Understanding the role of cultural, social, and economic factors is vital to the development of solutions.

Units
Unit 1: The Living World: Ecosystems
Unit 2: The Living World: Biodiversity
Unit 3: Populations
Unit 4: Earth Systems and Resources
Unit 5: Land and Water Use
Unit 6: Energy Resources and Consumption
Unit 7: Atmospheric Pollution
Unit 8: Aquatic and Terrestrial Pollution
Unit 9: Global Change

Contact me / Communication

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