

Course Details

The goal of the AP Environmental Science course is to provide students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, to identify and analyze environmental problems both natural and human-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving and/or preventing them.

Environmental science is interdisciplinary; it embraces a wide variety of topics from different areas of study. Yet there are several major unifying constructs, or themes, that cut across the many topics included in the study of environmental science. The following themes provide a foundation for the structure of the AP Environmental Science course.

1. Science is a process.
 - Science is a method of learning more about the world.
 - Science constantly changes the way we understand the world.
2. 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.
3. The Earth itself is one interconnected system.
 - Natural systems change over time and space.
 - Biogeochemical systems vary in ability to recover from disturbances.
4. Humans alter natural systems.
 - Humans 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.
5. Environmental problems have a cultural and social context.
 - Understanding the role of cultural, social and economic factors is vital to the development of solutions.
6. Human survival depends on developing practices that will achieve sustainable systems.
 - A suitable combination of conservation and development is required.
 - Management of common resources is essential.

This course covers the following topics (for a more detailed description of the topic outline please see the course description link above):

I. Earth Systems and Resources (10%–15%)

- A. Earth Science Concepts (Geologic time scale; plate tectonics, earthquakes, volcanism; seasons; solar intensity and latitude)
- B. The Atmosphere (Composition; structure; weather and climate; atmospheric circulation and the Coriolis effect; atmosphere-ocean interactions; ENSO)
- C. Global Water Resources and Use (Freshwater/saltwater; ocean circulation; agricultural, industrial, and domestic use; surface and groundwater issues; global problems; conservation)
- D. Soil and Soil Dynamics (Rock cycle; formation; composition; physical and chemical properties; main soil types; erosion and other soil problems; soil conservation)

II. The Living World (10%–15%)

- A. Ecosystem Structure (Biological populations and communities; ecological niches; interactions among species; keystone species; species diversity and edge effects; major terrestrial and aquatic biomes)
- B. Energy Flow (Photosynthesis and cellular respiration; food webs and trophic levels; ecological pyramids)
- C. Ecosystem Diversity (Biodiversity; natural selection; evolution; ecosystem services)
- D. Natural Ecosystem Change (Climate shifts; species movement; ecological succession)
- E. Natural Biogeochemical Cycles (Carbon, nitrogen, phosphorus, sulfur, water, conservation of matter)

Course Resources

AP Environmental Science Course Description (PDF)
(<http://apcentral.collegeboard.com/apc/publ-environmental-science-course-description.pdf>)

Next steps

- Enrolling in the course
- Understanding exam fees and reductions
- View Laboratory and Field Investigation
- View Exam Practice Tips

Interested in taking AP Environmental Science? Talk to your teachers and counselors about finding the right course for you.

AP & Your Future

AP Environmental Science can lead to ...

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Related courses

- AP Biology
- AP Chemistry
- AP Physics 1: Algebra-Based
- AP Physics 2: Algebra-Based
- AP Physics C: Electricity and Magnetism
- AP Physics C: Mechanics

Recommended course preparation

- Successful completion of two years of high school laboratory science
 - One year of life science
 - One year of physical science
- Successful completion of at least one year of algebra
- Successful completion of an earth science course is desirable but not required

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III. Population (10%–15%)

- A. Population Biology Concepts (Population ecology; carrying capacity; reproductive strategies; survivorship)
- B. Human Population

IV. Land and Water Use (10%–15%)

- A. Agriculture
- B. Forestry (Tree plantations; old growth forests; forest fires; forest management; national forests)
- C. Rangelands (Overgrazing; deforestation; desertification; rangeland management; federal rangelands)
- D. Other Land Use
- E. Mining (Mineral formation; extraction; global reserves; relevant laws and treaties)
- F. Fishing (Fishing techniques; overfishing; aquaculture; relevant laws and treaties)
- G. Global Economics (Globalization; World Bank; Tragedy of the Commons; relevant laws and treaties)

V. Energy Resources and Consumption (10%–15%)

- A. Energy Concepts (Energy forms; power; units; conversions; Laws of Thermodynamics)
- B. Energy Consumption
- C. Fossil Fuel Resources and Use (Formation of coal, oil, and natural gas; extraction/purification methods; world reserves and global demand; synfuels; environmental advantages/disadvantages of sources)
- D. Nuclear Energy (Nuclear fission process; nuclear fuel; electricity production; nuclear reactor types; environmental advantages/disadvantages; safety issues; radiation and human health; radioactive wastes; nuclear fusion)
- E. Hydroelectric Power (Dams; flood control; salmon; silting; other impacts)
- F. Energy Conservation (Energy efficiency; CAFE standards; hybrid electric vehicles; mass transit)
- G. Renewable Energy (Solar energy; solar electricity; hydrogen fuel cells; biomass; wind energy; small-scale hydroelectric; ocean waves and tidal energy; geothermal; environmental advantages/disadvantages)

VI. Pollution (25%–30%)

- A. Pollution Types
- B. Impacts on the Environment and Human Health
- C. Economic Impacts (Cost-benefit analysis; externalities; marginal costs; sustainability)

VII. Global Change (10%–15%)

- A. Stratospheric Ozone (Formation of stratospheric ozone; ultraviolet radiation; causes of ozone depletion; effects of ozone depletion; strategies for reducing ozone depletion; relevant laws and treaties)
- B. Global Warming (Greenhouse gases and the greenhouse effect; impacts and consequences of global warming; reducing climate change; relevant laws and treaties)
- C. Loss of Biodiversity

For more detail on the course topics covered in Environmental Science, see the Course Description.

Learn about the exam

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