

AP Environmental Science

Level of Difficulty	Estimated Homework	Prerequisites
<input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Difficult <input type="checkbox"/> Very Difficult	90 minutes per day* *This is a general guideline for planning and scheduling purposes. A student's ability level may affect actual preparation time needed.	District The ability and academic background to complete college-level work. Department B or better in Biology B or better in Chemistry or C or better in AP Chemistry Completion of Algebra 2 Please see student background expectations

Student Background

A student entering AP Environmental Science should be able to:

- 7th grade Science Investigation and Experimentation Standards:
 - Select and use appropriate tools and technology (including calculators, computers, balances) to perform tests, collect data, and display data.
 - Use a variety of print and electronic resources (including the internet) to collect information and evidence as a part of a research project.
 - Communicate the logical connection among hypotheses, science concepts, tests conducted, data collected, and conclusions drawn from the scientific evidence.
 - Communicate the steps and results from an investigation in written report and oral presentations.
- 8th grade Science Investigation and Experimentation Standards:
 - Plan and construct a scientific investigation to test a hypothesis.
 - Construct appropriate graphs from data and develop quantitative statements about the relationships variables.
 - Apply simple mathematical relationships to determine a missing quantity in a mathematic expression, given the two remaining terms (including $\text{speed}=\text{distance}/\text{time}$, $\text{density}=\text{mass}/\text{volume}$, $\text{volume}=\text{area} \times \text{height}$)
- 9th-12th Science Investigation and Experimentation Standards:
 - Formulate explanations by using logic and evidence.
 - Distinguish between hypothesis and theory as scientific terms.
 - Identify possible reasons for inconsistent results, such as sources of error or uncontrolled conditions.
 - Analyze situations and solve problems that require combining and applying concepts from more than one area of science.
 - Solve scientific problems by using quadratic equations and simple trigonometric, exponential, and logarithmic functions.
- 9th-12th Biology Standards:
 - Define biodiversity as the sum total of different kinds of organisms and is affected by alterations of habitats.
 - Analyze changes in an ecosystem resulting from changes in climate, human activity, introduction of nonnative species, or changes in population size.

- Explain how fluctuations in population size in an ecosystem are determined by the relative rates of birth, immigration, emigration, and death.
- Explain how water, carbon, and nitrogen cycle between abiotic resources and organic matter in the ecosystem and how oxygen cycles through photosynthesis and respiration.
- Explain that each link in a food web some energy is stored in newly made structures but much energy is dissipated into the environment as heat. This dissipation may be represented in an energy pyramid.
- 9th-12th Chemistry Standards:
 - List observable properties of acids, bases, and salt solutions
 - Use the pH scale to characterize acid and base solutions.
 - Calculate pH from the hydrogen-ion concentration.
 - Define solute and solvent.
 - Describe the dissolving process at the molecular level by using the concept of random molecular motion.
 - Explain that temperature, pressure, and surface area affect the dissolving process.
 - Calculate the concentration of a solute in terms of grams per liter, molarity, parts per million, and percent composition.
 - Explain that reaction rates depend on such factors as concentration, temperature, and pressure.
- Algebra 1 Standards:
 - Interpret and use ratios in different contexts to show relative sizes of two quantities, using appropriate notations.
 - Graph linear functions, noting that vertical change (change in y-value) per unit of horizontal change (change in x-value) is always the same and know that the ratio is called the slope of a graph.
 - Students apply algebraic techniques to solve rate problems and percent problems.

Course Description

Topics covered include Interdependence of Earth Systems, Human Population Dynamics, Renewable and Nonrenewable Resources, Scientific Analysis Energy, Environmental Quality, Global Changes and Their Consequences, Environment and Society, and Choices for the Future.

Students will explore these topics through discussions, laboratory investigations, long-term projects, teacher demonstrations, and in-class assignments. This course is aligned with the California State Science Standards, as well as the guidelines described by CollegeBoard for the course.

Grading

The grading system is based on weighted percentages. Each assignment will have a point value and be weighed according to the category it falls under. Individual teachers may make slight modifications on the weighted percentages.

Category	Weight
Homework/Projects	10%
Laboratory	25%
Quiz	15%
Exam	30%
Midterm/Final	20%

Links

CollegeBoard <http://www.collegeboard.com>

CA State Science Standards <http://www.cde.ca.gov/stadards>

Science Framework for California Public Schools

<http://www.cde.ca.gov/re/pn/fd/sci-frame-dwnld.asp>

Sample STAR Questions <http://www.cde.ca.gov/ta/tg/sr/css05rtq.asp>

Supplemental Information

10 credits

Meets high school graduation requirement for physical science or elective credits

Meets UC/CSU subject area “d” requirement

Weighted grade