

Advanced Placement (AP) Environmental Science

Prerequisites:

Successful completion of college prep Biology and chemistry (preferably Honors Chemistry) with a grade of B or higher. CP Physics is highly recommended.

Course Description:

The AP Environmental Science course provides students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world. The course helps students identify and analyze natural and human-induced environmental problems. It enables them to learn how to assess the risks associated with these problems and evaluate alternative solutions for resolving and preventing them. To accomplish this goal, the AP Environmental Science [Course & Exam Description](#) defines concepts, skills, and understandings required by representative colleges and universities for granting college credit and placement.

The current AP® Environmental Science course shifts from a traditional “content coverage” model of instruction to one that focuses on enduring, conceptual understandings and the content that supports them. This approach will enable you to spend less time on factual recall and more time on inquiry-based learning of essential concepts, and will help you develop the reasoning skills necessary to engage in science practices used throughout your study of AP Environmental Science.

Upon completion of this course students will be well prepared for further advanced studies in college science courses. Students are expected to take the College Board’s May administration of the AP Environmental Science exam. College credit may be earned if the student’s scores are high enough (*colleges may differ in their acceptance and required score for college credit*). ***Students should be aware that AP Environmental Science is a fast paced, rigorous, and demanding course. As such, only highly motivated students with an interest in science should enroll.*** For sample questions and a more detailed description of this course, please refer to [THIS](#) College Board website.

Textbook and Materials:

- **Exploring Environmental Science for AP by Miller & Spoolman**
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ISBN: 0357437810
- **Suggested supplies:** Pencils, pens, colored pencils/pens, highlighters, scientific calculator, lined notebook paper, index cards, 3-ring binder



Course Structure:

Most classes will incorporate four different components: *Lecture, discussion, problem solving and laboratory*. Various resources are used to enhance and supplement the concepts, including visual media, the internet, student discussions and outside texts. Due to the content requirements laid out by the College Board, students in AP Environmental Science should be capable of concentrating for extended periods of time.

The four big ideas are:

1. **ENERGY TRANSFER** - 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.
2. **INTERACTIONS BETWEEN EARTH SYSTEMS** - The Earth is one interconnected system. Natural systems change over time and space. Biogeochemical systems vary in ability to recover from disturbances.
3. **INTERACTIONS BETWEEN DIFFERENT SPECIES AND THE ENVIRONMENT** - 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.
4. **SUSTAINABILITY** - 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.

Grading:

Grades are earned, not given! The grading system is based on weighted percentages. Each assignment will have a point value and be weighted according to the category it falls under (see below).

Explanation of Grading Categories:

Classwork / Homework (20%)

To develop mastery of the subject, it is vital that students practice what they learn. There will be many required assignments, both in-class and outside of class, to help students achieve this high level of understanding. All students learn differently, and **the goal is for students to become independent learners** who understand how they learn/study best. Additional resources are provided beyond the required assignments.

Labs / Projects (30%)

A large portion of instructional time is engaged in hands-on, inquiry-based laboratory and/or fieldwork investigations, projects and activities. Lab experiments are an academic component of the class. In addition to the lab report, following safety protocol, proper use of equipment, and following procedures are also evaluated.

Assessments (50%)

Exams are opportunities for students to reflect on their own personal understanding of the topics we cover in a unit. Questions will be reflective of the College Board AP Biology Exam and consist of both MCQs (Multiple Choice Questions) and FRQs (Free Response Questions).

Grade Rounding:

A grade of 89.5 (or 79.5 or 69.5) will be rounded **IF the following criteria are met:**

1. Overall Homework / Classwork category has a score of 95% or higher
2. Has zero academic honesty violations
3. Has zero contacts home (or 1:1 conference if over 18) regarding behavior, tardies or excessive personal/unexcused absences.

Academic Honesty:

- Academic honesty is an expectation for all students every day in the San Dieguito Union High School District.
- All work is expected to be completed only by the student. While collaboration on homework/labs can be beneficial for some students, any work submitted for credit must be **clearly different** from your lab partner/classmates. Whether students do the copying or provide the source to copy from, both parties will be considered academically dishonest and punished according to the same guidelines. This includes students that pass testing information to one another between periods. **Never put your friends and classmates in this position by asking to copy their work!**
 - *All work submitted must be in your own words. Any text taken from a source other than your own work must be cited.*
 - *Any plagiarized work, whether from a fellow student or other source will receive an automatic 0 and a referral. A second offense will result in an automatic 0 for the course as per the SDUHSD district policy. Make sure to cite any work that is not your own. Don't Plagiarize!*

AI policy

- Students should not use generative AI applications in this course except as approved by Mr. Siegel. Any use of generative AI outside of teacher-approved guidelines constitutes misuse. Misuse of generative AI is a violation of the course policy on academic honesty and will be investigated thoroughly and appropriate disciplinary measures will be taken consistent with Board policy.

Cell Phone Policy:

- While smartphones are certainly an amazing and useful tool in the right context, they serve mainly as a distraction & temptation in the classroom. Phones will be placed in the phone caddy at the beginning of the period and can be retrieved when Mr. Siegel gives the directive.

Other Important Information:

- **General Rules for Assignments** (*Keep all your work for review and in case of clerical error*)
 - **Full Participation and safety is an expectation:** clear directions and expectations will be given for assignments and labs. All work can be assessed for safe and full participation.
 - **Late Work:**
 - Classwork/Homework: Student will receive half credit if done and turned in on the day of that unit's exam (along with stamp sheet)
 - Labs can be turned in late for a 10% deduction for each day it is late.
 - Students need to address grading concerns when work is returned during that class period. Students have 1 week to review assessments during tutorial time. After these windows, no

changes to the grade will be made, nor discussions regarding points will be had after 1 week from the due date.

- **Homework:** Students should expect on average, 0.5-1 hour of homework per day. This does not include time spent studying content. The class daily agenda and Google Classroom will help students organize their week accordingly so they can successfully complete assignments by the due date.
- **Attendance:** Attendance will be taken every day and students must be in their seats, ready to learn at the scheduled time or they will be given a tardy.
 - To leave campus you must have a pass (not called in after)
 - When arriving late, check in at attendance office
- **Absences:** If absent, you get one day past the due date for every one day you're out.
 - Example: Student absent Friday 1/12 and returns Monday 1/16 and classwork was due 1/12 and Notes were taken in class on Friday 1/12.
 - Student will turn in classwork on 1/16 and notes on Tuesday 1/13 at the latest (could be completed and turned in Monday 1/16)
- **Office Hours:** By appointment - before school, lunch, after school, or on Google Meet.
- **Expectations**
 1. Be highly self-motivated and arrive to class on time, prepared to participate and learn.
 2. Be respectful to your peers and Mr. Siegel at all times.
 3. Be aware of all classroom procedures and assignment due dates.
 4. Complete all assignments by the due date.
 5. Be an active participant in class discussions, activities and ask questions.

■ **Tips for Writing AP Environmental Science Free Response/Short Free Response:**

1. Read the question! You will not get points if you answer the wrong question, no matter how much you write.
2. Explain all your answers in complete sentences; do not write in outline form. You may need to make an outline to help you organize your thoughts, but you will receive no credit for this unless your thoughts are explained.
3. Pictures alone receive no points. Illustrations can be used to supplement your answer, but should be appropriately labeled and referenced in your essay.
4. Define and explain all terms used, even if they seem obvious. Pretend you are writing to a 9th grader.
5. Answers to multi-part questions should be clearly labeled. Make it extremely easy for the grader to find information and award points.
6. Write **clearly** and **neatly**. If your handwriting is poor, skip lines to make it more legible. Make your essay easy to grade.
7. Use only blue or black ink.
8. Pacing is extremely important! Allot around 20 minutes per essay.
9. There is no penalty for guessing on the essays. Write!
10. In experimental design questions, the following should be included: Hypothesis, control, independent variable, dependent variable, how data will be collected, analyzed and graphed, and how conclusions will be drawn.
11. When including a graph, **always** clearly label the axes with units.

Laboratory Safety Contract

PURPOSE

Science is a hands-on laboratory class. You will be doing laboratories which may require the use of hazardous chemicals. Safety is the number one issue in science class. Therefore students must be knowledgeable in safety precautions. Student/Parent info sheet is signed acknowledging the understanding of safety.

GENERAL RULES

1. Follow the written procedure carefully. If you do not understand, ask the instructor for clarification.
2. Never work alone in a lab. An instructor must be present at all times.
3. When you enter a science classroom do not touch any of the materials until the instructor gives the okay.
4. No food, beverages, or gum in class at any time.
5. Conduct the experiment provided in the procedure. Do not create your own laboratory experiment. Unauthorized experiments are illegal in the lab.
6. Be prepared for lab days by reading procedures before entering class.

7. Keep your lab station clean. Once you have completed your lab please leave the laboratory area cleaner than you found it.
8. Keep the aisles clear in the laboratory area.
9. Know where and how to use the fire extinguisher, eye wash and fire blankets. Know where the first aid kit and phone is in case of emergencies.
10. Be alert and notify the instructor immediately if there are any unsafe conditions.
11. Read the labels of chemicals carefully before use.
12. Keep your hands away from your eyes, nose and mouth when using chemicals. Make sure to wash your hands after the lab is completed.
13. Know what to do if there is a fire drill during the laboratory. Turn off gas and electrical equipment.
14. When using sharp instrumentation, carry the tips pointed down and away from others. Do not attempt to catch a sharp falling object.
15. Students are never permitted in the science storeroom or preparation room unless instructed to do so by the instructor.
16. Do not leave experiments unattended at any time.

CLOTHING

17. **Goggles must be worn at all times during laboratory. NO EXCEPTIONS.**
18. Dress properly for the laboratory. **Long hair must be put up, no dangling jewelry, no baggy clothes. No open toed shoes.**

ACCIDENTS AND INJURIES

20. Report any spills immediately to the instructor no matter how trivial it may seem.
21. If a chemical should splash into your eyes or on your skin, make sure to rinse thoroughly with water at least 20 minutes. Notify the instructor immediately.

HANDLING CHEMICALS

22. All chemicals should be considered dangerous and used with extreme caution. Do not touch, taste or smell any chemicals in the laboratory.
23. Never return used chemicals into their original containers.
24. Handle flammable liquids with extreme care. Do not dispose of them near a flame or potential spark.

25. Acids must be handled with extreme care. Always add acid to water, swirl or stir solution and be careful of the heat produced, particularly with sulfuric acid.

26. Take great care when transferring acids and other chemicals from one part of the laboratory to another. Hold them securely and walk carefully.

HANDLING GLASSWARE AND EQUIPMENT

27. Do not remove chemicals from the laboratory area.

28. Carry all glass tubing vertically, to minimize the chance of breaking it.

30. Fill water bottles with distilled water only.

29. When removing an electrical plug from a socket, make sure to grasp the plug and not the cord.

30. Inspect all glassware before using in laboratory. Look for chipped or cracked glassware. If you find glassware broken, do not use it, and notify the instructor.

31. If you do not understand how to use a piece of laboratory equipment, ask the instructor for help.

32. Do not put hot glassware on a cold surface because the glass may shatter.

HEATING SUBSTANCES

33. Take extreme caution when using a gas burner. Make sure hair, jewelry, clothing, and hands are a safe distance from the flame.

34. Do not point the open end of a test tube at another person when heating.

35. Never look into a container that is being heated.

36. Never leave a lit burner unattended. Never leave anything that is being heated or is visibly reacting unattended. Always turn the burner or hot plate off when not in use.

Please complete the Syllabus Form to acknowledge that you have read and understand the syllabus and will abide by all the rules and regulations stated therein.