

# Environmental Science

## AP ROP Syllabus

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**INSTRUCTOR:** Mr. Sierra

**GRADE LEVEL:** Grades 11 ~12

**COURSE LENGTH:** One Year

**PREREQUISITES:** Algebra and Biology

**CREDIT:** Meets University of California and CSU a-g science in the “g-Laboratory Science” category.  
Students who receive at least a **3** on the AP test can get 4 units of UC or CSU credit.

### **COURSE DESCRIPTION:**

Environmental Science provides students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, identify and analyze environmental problems both natural and human-made, evaluate the relative risks associated with these problems, and examine alternative solutions for resolving 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 themes. This course includes a strong laboratory and field investigation component. Experiences both in the laboratory and in the field provide students with opportunities to test concepts and principles that are introduced in the classroom.

In this class, students gain a broad awareness of environmental science and technological career opportunities. Job shadowing and internships are encouraged. An emphasis is placed on students using critical thinking and analytical skills to make a positive impact on the environment.

Students who take the AP Environmental Science Exam in May have the opportunity to earn Advanced Placement (AP) credit for college. Integrated throughout the course are career technical education standards which include basic academic skills, communication, career planning, technology, problem solving, safety, responsibility, ethics, teamwork, and technical knowledge.

### **COURSE GOALS ~ Students will:**

1. Learn a microscopic, macroscopic and global perspective of the environment
2. Learn what ecosystems are and how they work
3. Demonstrate the use of the scientific method to evaluate and solve environmental problems
4. Understand the balance between mankind's development of land for food, fiber and mineral resource production and maintaining strong biodiversity
5. Show understanding and sensitivity to impacts of energy, resource, and water use/waste, population growth and needs for a sustainable future
6. Illustrate an understanding of biodiversity and the need for truly sustainable personal and business activities

**COURSE CONTENT:** The course will include a balance between teacher-led lecture and instruction, laboratory, fieldwork, and student-led discussion on specific topics.

### **OUTLINE:**

#### **1<sup>st</sup> Quarter – Ecosystems**

- Scientific Method & Critical Thinking
- Environmental History/Bioneers
- Energy Flow & Matter Cycles
- Succession, Evolution & Extinction
- Plant & Animal Food Web
- Habitats/Biomes

#### **2<sup>nd</sup> Quarter – Air & Water**

- Air Pollutants
- Greenhouse Effect
- Climate Change
- Water Conservation/Contamination/  
Testing/Filtration/Sanitation

#### **3<sup>rd</sup> Quarter – Resources**

- Renewable vs. Non-Renewable
- Energy – Alternatives & Efficiency
- Mining / Manufacturing
- Waste Disposal / Recycling
- Soil, Food & Agriculture

#### **4<sup>th</sup> Quarter – Sustainability**

- Carrying Capacity
- Population & Health
- Consumption vs. Conservation
- Laws / Legislation
- Environmental Organizations

## **MATERIALS:**

Each student needs a **lab notebook** – the typical “composition notebooks” work fine. Textbook: *Environmental Science for AP\**, Friedland/Relyea, BFW Publishing Group. Extensive use of internet resources will be used to supplement text materials. In addition, the class will make selections from a wide variety of environmental documentary videos.

## **GRADING:**

**25%** will be based on student **journals** that will include class notes, data from the textbook, lab write-ups and reflections on discussions.

**25%** will be **reports** and/or **presentations** to be done about twice each quarter

**20%** will be from **tests** (similar to AP test format) approximately once every 2 weeks

**10%** will be **homework** which will generally be typed and submitted online.

**10%** will be **participation** points earned during class discussions and presentations.

**10%** will be awarded for completing 5 **community service** hours per semester.

- Students may always participate in more community service activities for **extra credit**. However, this must be agreed upon with Mr. Sierra *beforehand*.

## **PHOTOS/VIDEO:**

I have applied for and received several grants to raise funds for materials in this class. The donors typically require documentation and evidence of the materials being used. If there is a reason why you should not be included in photos or video taken in class, please notify Mr. Sierra. There will be a photo/video release to be signed if your photo is selected for publication.

## **CLASSROOM ETIQUETTE:**

I expect everyone to be in their seats with notebooks and writing tools ready when the bell rings. Tardies will be subject to detention (according to school policy). Cell phones and other electronics should be put away and not used during class *unless given permission from the teacher*.

No food or drink (besides water) is allowed in the classroom. If there is a medical condition requiring food or drinks see Mr. Sierra individually.

Restrooms may be used one-at-a-time. Please wait for an appropriate time (without interrupting lecture or class discussion) and ask for permission before leaving. Also, be respectful of others' need to go by returning to class quickly.

You may find the topics we discuss in this class to be sensitive or controversial. It is important that we be respectful and sensitive to the feelings of others but also to not take opposition too personally. We will discuss ways to ask questions rather than criticize and to speak for one's self.

## **CONCLUSION:**

I am excited to have every one of you in this class, and I look forward to observing how your perspectives and understanding of environmental issues in our community and planet grows. There is an urgent need for environmental awareness in the world today. We need people like you who care enough to make informed, conscientious decisions for our planet in the future.

*Knowledge gives us the power that can transform our community and help us live healthier lives.*