

Course Description

A. COVER PAGE

Date of Submission (Please include Month, Day and Year) **November 28, 2004**

1. Course Title Advanced Placement
Environmental Science

2. Transcript Title(s) / Abbreviation(s)
AP Env Science

3. Transcript Course Code(s) / Number(s)
SC1030 SC1031

4. School
Pioneer Valley High School

5. District
Santa Maria Joint Union High School
District

6. City Santa Maria, CA 93455

9. Subject Area

- History/Social Science
- English
- Mathematics
- Laboratory Science
- Language other than English
- Visual & Performing Arts
 - Intro Advanced
- College Prep Elective

10. Grade Level(s) for which this course is designed

11 12

7. School / District Web Site www.smjuhsd.k12.ca.us

11. Seeking "Honors" Distinction? Yes No

8. School Course List Contact

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12. Unit Value

- 0.5 (half year or semester equivalent)
- 1.0 (one year equivalent)
- 2.0 (two year equivalent)
- Other: _____

13. Complete outlines are not needed for courses that were previously approved by UC. If course was previously approved, indicate in which category it falls.

- A course reinstated after removal within 3 years. Year removed from list? _____
Same course title? Yes No
If no, previous course title? _____
- An identical course approved at another school in same district. Which school?
Same course title? Yes No
If no, course title at other school? _____
- Alternative course title for course with identical content at this school
Title of previously-approved identical course: _____
- Approved Advanced Placement (AP) or International Baccalaureate (IB) course
- Approved UC College Prep (UCCP) Initiative course
- Year-long VPA course replacing two approved successive semester-long courses in the same discipline
- Approved P.A.S.S. course
- Approved ROP/C course. Name of ROP/C? _____
- Other. Explain: _____

14. Is this course modeled after an UC-approved course from another school outside your district? Yes No

If so, which school(s)? Nipomo High School, Castro Valley High School

Course title at other schools Advanced Placement Environmental Science

15. Pre-Requisites 'B' grade (or better) in Biology A/B, and in Chemistry A/B or Physics A/B, and in Algebra I A/B or Algebra II A/B, or consent of the instructor.

16. Co-Requisites

none

17. Is this course a resubmission? Yes No

If yes, date(s) of previous submission? _____

Title of previous submission? _____

18. Brief Course Description

Advanced Placement Environmental Science is multidisciplinary; it embraces a wide variety of topics from different areas of study. It will be taught from a rigorous science perspective which stresses scientific principles and analysis, and includes a laboratory component. Environmental issues will also be studied from sociological and political perspectives. It is intended to enable students to undertake, as first-year college students, a more advanced study of topics in environmental science, or alternatively, to fulfill a basic requirement for a laboratory science and thus free time for taking other courses.

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

B. COURSE CONTENT

Please refer to instructions

19. Course Goals and/or Major Student Outcomes

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

Students will make connections between the concepts discussed and everyday life, see the importance of understanding scientific ideas, and see the interconnectedness of science and society.

Students will benefit from understanding how integral science is to society and that an educated person has knowledge about science, social science, and humanities

20. Course Objectives

A. Awareness of Human Impacts on the Environment

- The students will know behaviors of responsible consumers.
- The students will look at environmental science with a global perspective.
- The students will analyze industry practices regarding sustainability.
- The students will begin to develop personal goals regarding environmental stewardship.
- The students will employ sound scientific principles.

B. Thinking and Problem Solving Skills

- The students will exhibit critical and creative thinking.
- The students will apply numerical estimation.
- The students will apply measurement and calculations where appropriate.
- The students will recognize problem situations.
- The students will identify, locate and organize needed information or data.
- The students will propose, evaluate and select alternative solutions.

C. Employment Literacy

- The students will understand career paths and strategies for obtaining employment within the environmental field.
- The students will be familiar with environmental impacts relevant to their field.

21. Course Outline

First Term

- I. The Ecosystem: interdependence of Earth's systems: fundamental principles and concepts.
 - A. Energy flow
 - B. Matter cycling
 - C. The solid earth
 - D. The atmosphere
 - E. The biosphere
- II. Scientific analysis: initiation of research project:
 - A. development of topic
 - B. research question
 - C. null hypothesis
 - D. research data gathering
 - E. plan of action
- III. Human population: dynamics.
 - A. Human history--beginnings.
 - B. Global distribution of population.
 - C. Carrying capacity.
 - D. Cultural and economic influences.

Second Term

- IV. Renewable and nonrenewable resources: distribution, ownership, use, degradation
 - A. Water.
 - B. Minerals.
 - C. Soils.
 - D. Biological.
 - E. Energy.
 - F. Land.
- V. Environmental quality.
 - A. Air, water, soil: pollutants and their effects.
 - B. Solid waste.
 - C. Human health: impact of chemical and biological agents.
- VI. Global changes and their consequences
 - A. changes
 1. atmosphere
 2. oceans
 3. biota
 - B. Consequences
 1. atmosphere
 2. oceans
 3. biota
- VII. Environment and society: trade-offs and decision making
 - A. Economic forces
 - B. Cultural and aesthetic considerations
 - C. Environmental ethics
 - D. Environmental laws and regulations
 - E. Issues and options

1. conservation, preservation, restoration
2. sustainability, mitigation, remediation

22. Texts & Supplemental Instructional Materials

Text: Wright, Richard T. *Environmental Science, Toward a Sustainable Future, Ninth Edition.* Pearson, Prentice Hall. 2005.

Supplemental Instructional Materials:

State of California Integrated Waste Management Board. *Earth Resources, A Case Study: Oil.* 2001.

Sussman, Art. *Dr. Art's Guide to Planet Earth.* Chelsea Green Publishing Co. 2000.

23. Key Assignments

Investigate a science-based societal issue through research

Possible topics: Land and water use decisions in California
Choice of energy sources

Interactive CD ROM Activities: "Global City, Environmental Science in Practice"

Understand a Pest Species Population Growth

Identify the Source of Air Pollution

Compare Risks as Global City faces a Disease Outbreak

Monitoring for Sewage Contamination

Coping with Ultraviolet Radiation

Light & Nutrients: The Controlling Factors in Marine Ecosystems

24. Instructional Methods and/or Strategies

Reading, writing, inquiry, collaboration

Critical thinking/problem solving

Lecture and interactive presentations

Think About It Labs

In-class small group activities

Individual study

Touchstones Discussions

Guest speakers

Student research

Student presentations

Social action: use of research knowledge

25. Assessment Methods and/or Tools

Class participation

Homework

Tests and quizzes

Essays

Research project: written and oral presentation to class and involved community agencies

C. HONORS COURSES ONLY

Please refer to instructions

26. Indicate how this honors course is different from the standard course.

D. OPTIONAL BACKGROUND INFORMATION

Please refer to instructions

27. Context for Course (optional)

28. History of Course Development (optional)

The course description for Advanced Placement Environmental Science from the Castro Valley Unified School District was used in the development of this course. Slight modifications to that description have been made.