

# FOLSOM CORDOVA UNIFIED SCHOOL DISTRICT

## Environmental Science

**Date:** December 2010

**Subject Area:** Elective Science

**Proposed Grade Level(s):** 11<sup>th</sup> – 12<sup>th</sup>

**Course Length:** One Year

**Grading:** A-F

**Number of Credits:** 5 per Semester

**Prerequisites:** Successful completion of Biology.

### 1) COURSE DESCRIPTION:

This course is designed to provide the student with theories and principles related to Environmental Agriculture & Natural Resources. Students will learn about the science in natural resources, conservation, soil, water, wildlife classification & habitat, forest species, air pollution, land quality, weather & climate, environmental impact on mineral use, sustainable agriculture systems and waste management. This course is intended to successfully prepare students who plan on majoring in Environmental, Agriculture or natural resources at a four-year college and/or university.

### 2) GENERAL GOALS / PURPOSES:

The overall aim of this curriculum will:

- A. Utilize Environmental, Earth, Agriculture & Natural Resource concepts as a relevant vehicle to teach biological, physical, and geo-science principles and improve the science principles and scientific literacy of students.
- B. Integrate mathematic standards, Language Arts, and science principles into an academically rigorous course that increases the student's capacity to think analytically, problem solve, and utilize effective research practices.

The course objectives are as follows:

1. Understand the importance of Natural Resources and its relationship to man.
2. Describe and identify the human population trends and demands on our resources.
3. Understand the science of natural resources
4. Analyze the natural resource damage that occurring in our ecological system.
5. Describe the physical and chemical properties of soils.
6. Hypothesize solutions for soil erosion problems.
7. Examine the importance of water and the water cycle.
8. Describe the climatic influences on plant growth and development.
9. Understand and explain the wildlife classification system.
10. Identify different varieties of forest trees.
11. Incorporate scientific methods and biological principles with modern Natural Resource practices.
12. Prepare students for college level entry in the various disciplines of Natural Resources.
13. Be familiar with cell theory and its application to the organization of all natural resource organisms.

### 3) STUDENT READING COMPONENT:

Students will be required to:

- A. Read text and handout materials. The text for this course is: Managing Our Natural Resources, published by Delmar, Cengage Learning (2009).
- B. Research concepts using internet and literary resource materials
- C. Laboratory Background and Instructional Materials

D. Read scientific articles and periodicals for current research and studies

#### **4) STUDENT WRITING COMPONENT:**

Students will be required to:

- A. Plan, Organize and Write a Research Report on Environmental Topics, Agriculture or Natural Resources
- B. Compose Presentation Materials
- C. Write Laboratory Reports
- D. Keep an ongoing interactive Notebook of topic knowledge and conceptual understanding
- E. Create a plan for a science fair project

#### **5) STUDENT ORAL COMPONENT:**

Students will be required to:

- A. Answer questions in class.
- B. Communicate concepts being instructed on in class.
- C. Present research findings in Oral Presentations to classmates.
- D. Present and explain projects and research findings to teachers, judges, and classmates.

#### **6) DETAILED UNITS OF INSTRUCTION:**

- A. Introduction to Environmental Science
  - Fields within Environmental Science
  - Renewability & Exhaustibility
  - Conservation and Preservation
  - Green Technology
- B. Use of Natural Resources
  - Human Population Trends & Demands
  - Resource Supply & Population
  - Urban and Rural Impacts to the Environment
  - Resource Recycling & Reuse
- C. Science Principles
  - The Earth in its Solar System
  - Spheres
  - Ecology
  - Succession
- D. Natural Resource Conservation
  - The Importance of Conservation
  - Natural Resource Damage & Pollution
  - History of Natural Resource Conservation
  - Minerals
    - Important Minerals
    - Environmental Impact of Mineral Use
    - Mineral Use and Supply
- E. Soil - Renewable Natural Resource
  - The Importance of Soil
  - Soil Content & Formation
  - Chemical & Physical Properties of Soil
  - Soil Profiles
- F. Land Resources
  - Land Quality & Capability
  - Capability Classification
  - Land Surveying
  - Land Descriptions
- G. Weather and Climate

- Weather and Climate as Resources
- Latitude and Longitude
- Measuring Weather
- Relationships to the Environment
- H. Water and Natural Resources
  - The Importance of Water
  - Water Composition and States
  - The Water Cycle
  - Watersheds & Wetlands
  - Water Quality Factors
- I. Air
  - Air Quality & Pollution
  - Air Quality Standards
  - Testing Air Quality
  - Preventing Air Pollution and its Impact on the Environment
- J. Wildlife
  - Wildlife Classification
  - Wildlife Animals
  - Habitat Classification
  - Wildlife Endangerment & Protection Practices
- K. Forests
  - Use of Forests
  - Physical Structure of Forests
  - Tree Species
  - Names and Identification of Trees
  - Forest Management
- L. Energy as a Natural Resource
  - Energy as a Resource
  - Sources of Energy
  - Energy Conservation
  - Green Energy: wind, solar, water.
- M. Sustainable Agriculture
  - Sustainable Agriculture Systems
  - Crop Cultural Practices
  - Sustainable Agriculture Practices
  - Precision Technologies
- N. Agriculture and Environmental Science Research Project
  - Development of Environmental Science Research Project
  - Analysis of project results
  - Management of project via Record Book
  - Instructional coordination and supervision
- O. Professional Opportunities in Environmental Science
  - Field Trips, Guest Speakers, Career Education
- P. Agricultural Inter-Personal & Leadership Development
  - Completion of a Supervised Agricultural Experience Program and data collection
  - Development of listening, speaking, writing & reading skill activities
  - Critical thinking & group team building activities
  - Agriculture presentations

## **7) THIS COURSE WILL PREPARE STUDENTS FOR THE CAHSEE AND/OR THE FCUSD EXIT EXAMS**

Writing, Reading, Language Arts, Math, Social Science, and Science

## **8) LAB FEE, IF REQUIRED: None**

## **9) SUBJECT AREA CONTENT STANDARDS TO BE ADDRESSED:**

Introduction to Environmental Science (Inv. & Experimentation)  
Use of Natural Resources (History-Social Science 10.10-1, 10.10-2, Biology 6c, Earth 9a)  
Science Principles (Earth 1a-d)  
Natural Resource Conservation  
Minerals (Earth 1c)  
Soil - Renewable Natural Resource (Earth 3c)  
Land Resources (Inv.& Experimentation, History-Social Science 11.11-5, 7)  
Weather and Climate (Earth 5, 6abcd, 8a-c)  
Water and Natural Resources (Earth 4, 5, 6, 7a-d, 9c; Biology 6d,f)  
Air (Earth 4, 5, 6, 7a-d; Biology 6d,f)  
Wildlife (Biology 6a-g, 7a, d, 8a, b)  
Forests (Biology 6a-g, 7a, d, 8a,b)  
Energy As a Natural Resource (Inv. & Experimentation)  
Sustainable Agriculture (Inv. & Experimentation, Earth 9a)  
Environmental Science Research Project (Inv. & Experimentation)  
Professional Opportunities in Environmental Science (Career Prep)  
Agricultural Inter-Personal & Leadership Development (District ESLRs)

## **10) DISTRICT ESLRs TO BE ADDRESSED**

### **Students will be:**

**Self-Directed Learner:** Students will be required to work independently, monitor their progress and meet assignment requirements at stated intervals. This class will prepare students to be self-directed lifelong learners.

**Effective Communicator:** Students will communicate their understanding of science concepts through written and oral expression.

**Quality Producer/Performer:** Students will demonstrate successful performance through unit assessments and a final research report on an appropriate topic.

**Constructive Thinkers:** Reading and analysis of text provided case studies and opposing points of view will develop students' problem solving/critical thinking skills.

**Collaborative Workers:** Students will need to identify and gather resources and information from outside the school and home to complete assignments.

**Responsible Citizens:** Students will become more knowledgeable of issues concerning the environment on a regional and global scale.