Acalanes Union High School District **Adopted: 5/16/07**

SUBJECT AREA – SCIENCE

COURSE TITLE:	Environmental Science
CBEDS ASSIGNMENT CODE:	2674
COURSE CODE:	S0710p
GRADE LEVEL:	11-12
COURSE LENGTH:	One Year
PREREQUISITE:	Biology, plus Chemistry and/or Geology
CREDIT:	10 Units
UC/CSU CREDIT:	Meets UC / CSU elective “g” requirement (requesting “d” approval)
GRADUATION REQUIREMENT:	Fulfills 10 units of elective science credit for graduation
STANDARDS AND BENCHMARKS:	Physics – 3.0, 4.0; Biology – 1.0, 2.0, 6.0, 7.0, 8.0, 9.0, 10.0 Chemistry – 1.0, 2.0, 3.0, 4.0, 5.0, 6.0, 7.0, 10.0, 11.0 Geology/Earth Science – 1.0, 3.0, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0; Investigation/Experimentation 1-10

SUBJECT AREA – SCIENCE

COURSE DESCRIPTION: Environmental Science is an elective integrated science course which provides students with the scientific principles, concepts, methodologies and experiences required to understand the inter-relationships of the natural world; identify and analyze both natural and man-made environmental problems; evaluate risks associated with these problems; and examine alternative solutions for resolving and/or preventing these problems.

This is a lab course. Students utilize modern technological equipment as well as the campus as a living laboratory.

COURSE GOALS: Upon completion of the course, student will:

1. Demonstrate an understanding and appreciation of the extensive interdependence of Earth's systems.
2. Analyze and interpret data and scientific research, including appropriate statistical and graphical presentations.
3. Develop and conduct well-designed experiments.
4. Think analytically and apply concepts to the solution of environmental problems.
5. Appreciate the human role in helping maintain a sustainable environment.
6. Gain a life-long appreciation, respect and sense of stewardship toward the environment.

TEXTBOOK MATERIALS: Living in the Environment: Principles, Connections, and Solutions, 11th ed., Miller, G.Tyler, 2000.

TEACHER RESOURCES: *Sewer Science Program*, Central Sanitation District's week-long lab in which students follow routine procedures to purify water and learn water testing techniques.
Careers in Marine Science, Marine Mammal Center, Marin, CA in-class workshop.
Laboratory Exercises in Environmental Science, 7th ed., Enger, Eldon D., 2000.
Journey to Planet Earth, PBS video series, 2003.
State of the Planet (annual updates), Washington, DC: World Watch Institute.
Environmental Science Activities Kit, Roa, Michael L, 1993.
AP Environmental Science curriculum handouts from College Board sponsored workshops.

Acalanes Union High School District
Course Content and Performance Objectives
ENVIRONMENTAL SCIENCE

	CAHSEE	Standards & Benchmarks	Standards Based Test (CST)	Assessment	Timeline
1.0 STUDENT UNDERSTANDS ABOUT THE INTERDEPENDENCE OF EARTH'S SYSTEMS.	N/A			Test Project Lab Report	25% of class time
1.1 The Flow of Energy • Forms and quality of energy • Laws of thermodynamics		Physics 3.1, 3.2, 3.3, 3.4, 3.5 4.1, 4.5	X		
1.2 The Cycling of Matter • Water • Carbon • Nitrogen, phosphorus, sulfur		Chemistry 1.1, 1.3, 1.6 3.1, 3.2, 3.3 6.1	X		
1.3 The Solid Earth • Earth history and the bio-geological time scale • Earth dynamics: plate tectonics, the rock cycle, soil formation		Geology 3.1, 3.2, 3.3, 3.4	X		
1.4 The Atmosphere • Atmospheric history • Atmospheric dynamics: weather, climate		Chemistry 7.1, 7.2 Geology 5.1, 5.2, 5.3, 5.4, 5.5	X		

	CAHSEE	Standards & Benchmarks	Standards Based Test (CST)	Assessment	Timeline
1.5 The Biosphere • Organisms and adaptation • Populations and communities: exponential growth, relationships, carrying capacity • Biomes • Ecosystems and change: succession • Evolution of life: natural selection and extinction		Biology 1.1, 1.2, 1.6 6.1, 6.2, 6.3, 6.5 Invest/Exper. 1.6 Geology 6.1	X		
2.0 STUDENT UNDERSTANDS ABOUT HUMAN POPULATION DYNAMICS.	N/A	Invest/Exper. 1.4		Test	10% of class time
2.1 History and Global Distribution • Demographics, such as birth and death rates • Carrying capacity • Cultural and economic influences					
3.0 STUDENT UNDERSTANDS ABOUT RENEWABLE AND NONRENEWABLE RESOURCES: DISTRIBUTION, OWNERSHIP, USE AND DEGRADATION.	N/A			Test Lab Report Project	15% of class time
3.1 Water • Fresh: agricultural, domestic, • Oceans: fisheries, desalinization		Biology 6.1, 6.2	X		
3.2 Minerals		Invest/Exper. 1.2, 1.3, 1.4			

	CAHSEE	Standards & Benchmarks	Standards Based Test (CST)	Assessment	Timeline
3.3 Soils • Soil types • Erosion and conservation		Invest/Exper. 1.7			
3.4 Biological • Natural areas • Biodiversity • Food and other agricultural products					
3.5 Energy • Nonrenewable sources • Renewable sources		Chemistry 14.1, 14.3, 14.5 Geology 4.1, 4.2	X		
3.6 Land • Residential and commercial • Agricultural and forestry • Recreational and wilderness			X		
4.0 STUDENT UNDERSTANDS ABOUT ENVIRONMENTAL QUALITY AND POLLUTION.	N/A			Test Lab Report Project Presentation	20% of class time

	CAHSEE	Standards & Benchmarks	Standards Based Test (CST)	Assessment	Timeline
4.1 Air / Water / Soil • SO_2, NO_x, • Pesticides • Greenhouse gases • Organic pollutants • Heavy metals • Point and non-point • Measurement • Remediation 4.2 Solid Waste • Types and amounts • Current disposal methods and their limitations • Alternatives 4.3 Impact on Human Health • Agents: chemical and • Biological • Cigarette smoking • Chronic versus acute diseases and effects • Risks and response		Chemistry 8.1, 8.4 Invest/Exper. 1.1 Biology 9.3 10.1	X X		
5.0 STUDENT UNDERSTANDS ABOUT GLOBAL CHANGES AND THEIR CONSEQUENCES. 5.1 Atmospheric • Global warming, • Ozone depletion	N/A	Geology 7.1, 7.2 Invest/Exper. 1.8, 1.9	X	Test Project	20% of class time

	CAHSEE	Standards & Benchmarks	Standards Based Test (CST)	Assessment	Timeline
5.2 Oceans and Coastal Areas • Surface temperature change • Current change • Sea level rise 5.3 Biota • Habitat destruction • Loss of biodiversity • Invasive species		Geology 5.1, 5.2, 5.3, 5.4, 5.5	X		
6.0 STUDENT UNDERSTANDS THE DYNAMIC EXISTING BETWEEN THE ENVIRONMENT AND SOCIETY, INCLUDING TRADE-OFFS AND DECISION MAKING. 6.1 Economic forces 6.2 Cultural and political forces 6.3 Environmental ethics 6.4 Environmental laws and regulations 6.5 Issues and options 6.6 Regional planning		Geology 9.1, 9.3 Invest/Exper. 1.10 1.11 1.12	X	Test Project Current Events Reports	10% of class time

TEACHING STRATEGIES AND PROCEDURES:

- Lecture
- Discussion
- Individual Lab Work
- Group Lab Work
- Reading
- Research Projects
- Student Presentations of Research Projects
- Student Presentations of Current Events
- Gardening
- Outdoor Observations
- Guest Speakers
- Videos

GRADING GUIDELINES:

See AUHSD Grade Guidelines: Final Mark Rubric and Final Course Mark Determination Components.