

Course Description

AP Environmental Science is a field that looks at interactions among human systems and those found in nature. AP Environmental science encompasses topics from many scientific disciplines, such as chemistry, biology, and Earth Science. Environmental science is an interdisciplinary field. As human activities continue to affect the environment, environmental science can help us understand the consequences of our interactions with our planet and help us make better decisions about our actions. Students will be able to identify and analyze environmental problems both natural and human-made.

Classes are based on a modified block schedule. On Monday, Tuesday, and Fridays classes are held for 45 minutes. On Wednesday and Thursday classes are 90 minutes. The labs will be scheduled for the 90 minute block days.

Tests

Test will be given according to syllabus and will be composed of multiple choice questions and essay questions. The majority of the multiple choice questions will come from lecture and lab notes. Practice writing essays are a main part of the curriculum. This practice will enable the student to gain experience and to develop strategies in writing Free Response questions. The AP Exam has four free-response questions.

Required Texts

AP Environmental Science (APES), 2nd edition, by Frieland and Relyea, 2012

Barron' AP Environmental Science Exam Guide 3rd Ed.

Scope and Sequence	<p>Chapter 1: Studying the state of the Earth</p> <ul style="list-style-type: none"> - Introduction to the course, syllabus - Sustainability - Scientific method - Project (final)discussion requirements (start now)
Readings & Note taking (at home assignment)	<p>Read Neuse River & Pfiesteria Read Chapter 1 and take notes Brainstorm how humans have caused changes around the world? (Current events log)</p>
Labs/Activities	<p>Review Vocabulary Conversion practice Math practice- Conversions The Impact of Human Disturbance on Biodiversity Lab</p>
Timeline	<p>One week (08/29-09/02)</p>
Evaluation Methods	<p>Assessment quiz – environmental vocabulary</p>

Scope and Sequence	Chapter 2: Environmental Systems <ul style="list-style-type: none"> - Matter - Forms of energy - Earth Systems
Readings & Note taking (at home assignment)	Read Chapter 2 and take notes Research the advantages and disadvantages of invasive species (current events log)
Labs/Activities	Review Vocabulary Conversion practice Math practice- Conversions Who's Got the Power Lab?
Timeline	One week (09/06-09/09)
Evaluation Methods	Assessment quiz – environmental vocabulary Negative Feedback Loop Quiz Questions(Free Response Question- FRQs) Questions (Multiple Choice- MC)

Scope and Sequence	<p>Chapter 3: Ecosystem Ecology: Understanding the Movement of Energy and Matter</p> <ul style="list-style-type: none"> - Food webs - Hydrologic cycle - Biogeochemical cycles - Photosynthesis - Cellular Respiration
Readings & Note taking (at home assignment)	<p>Math: Efficiency Calculations Nutrient cycle outline (handout) Barren's Review(BRg) <i>*Method for FR answers</i></p>
Labs/Activities	<p>Mark and Recapture Lab Review Vocabulary Conversion practice Math practice- Energy and Efficiency calculations Lowering the Carbon Footprint</p>
Timeline	<p>Three weeks (09/13-09/30)</p>
Evaluation Methods	<p>Formal Lab Report Assessment: Ecosystems (MC and FRQ's) Quizzes Teacher Assessment</p>

Scope and Sequence	Chapter 4: Global Climate and Biomes <ul style="list-style-type: none"> - Weather - Climate - Biomes (land and water) - Global Change
Readings & Note taking (at home assignment)	Read chapter 4 and take notes Research outcomes of floods, droughts, and famines (Current events log)
Labs/Activities	Earth's Atmosphere Lab Hotspots Lab Review Vocabulary Math Practice: Scatter plot of altitude and temperature
Timeline	Two weeks (10/03 – 10/14)
Evaluation Methods	Teacher Assessment Formal Lab Report FRQ's and MC Quizzes
QUIZ	
Field Trip	Claggett Farm 10/17/11

Scope and Sequence	<p>Chapter 5: Evolution of Biodiversity</p> <ul style="list-style-type: none"> - Biodiversity - Evolution - Natural Selection - Mutation - Ecology - The Living World
Readings & Note taking (at home assignment)	<p>Read Chapter 5 and take notes</p> <p>Endangered species poster</p>
Labs/Activities	<p>Review Vocabulary</p> <p>Geologic Time Scale Lab</p> <p>Math practice- Conversions</p>
Timeline	<p>One week (10/17-10/20)</p>
Evaluation Methods	<p>Assessment quiz (Natural Selection)</p> <p>FRQ's and MC</p> <p>Teacher Assessment</p> <p>Tests</p>
UNIT EXAM 1 10/20 100 MC Questions	

Scope and Sequence	<p>Chapter 6: Population and Community Ecology</p> <ul style="list-style-type: none"> - Populations growth - Communities - Exponential growth - Aquatic ecology - Logistic growth - Carrying Capacity - Keystone species
Readings & Note taking (at home assignment)	<p>Read chapter 6 and take notes</p> <p>Internet Research of "Easter Island" (Current Events)</p>
Labs/Activities	<p>Determining Population Size Lab</p> <p>Review Vocabulary</p> <p>Math practice – Doubling Time and the Rule of 70</p> <p>Calculating Population size</p>
Timeline	<p>Three weeks (10/24-11/09)</p>
Evaluation Methods	<p>Teacher Assessment</p> <p>Formal Lab Report</p> <p>Quizzes</p> <p>FRQ's and MC</p>
Quiz Chapters 5 and 6	

Scope and Sequence	<p>Chapter 7: The Human Population</p> <ul style="list-style-type: none"> - Population change - Fertility rate - Ecological Foot print - Family Planning
Readings & Note taking (at home assignment)	<p>Read chapter 7 and take notes “Cradle to Grave” One Child Policy (Current Events Log)</p>
Labs/Activities	<p>Lab Age Structure (Population Pyramid) World Population Lab Review Vocabulary Math practice – Demographic Transition Graph IPAT Equation Growth Rate Calculation</p>
	<p>Two weeks (11/10-11/23)</p>
Evaluation Methods	<p>Teacher Assessment Formal Lab Report Quizzes FRQ's and MC</p>

Scope and Sequence	Chapter 8: Earth Systems and Resources <ul style="list-style-type: none"> - Rock Cycle - Plate Tectonics - Soil Properties - Mining Ores and Coal
Readings & Note taking (at home assignment)	Read chapter 8 and take notes Comparison of hybrid vehicle and a gas vehicle Research Negatives of Oil Drilling (Current events Log)
Labs/Activities	Soil Lab Review Vocabulary Math practice – Measuring Plate Movement
Timeline	Three weeks (11/28-12/14)
Evaluation Methods	Teacher Assessment Formal Lab Report Quizzes FRQ's and MC
QUIZ 12/2	

Scope and Sequence	<p>Chapter 9: Water Resources</p> <ul style="list-style-type: none"> - Managing and using land and water resources - Consumption - Industry, power, nuclear plants - Water's future - Conservation - Flood plains, springs, dikes
Readings & Note taking (at home assignment)	<p>Read chapter 9 and take notes</p> <p>Research China's Three Georges Dam, The James Bay Project, and damming of the Colorado River (currents event log)</p>
Labs/Activities	<p>EcoBottle Lab</p> <p>Review Vocabulary</p> <p>Math practice – Calculate gallons used/year</p> <p>Calculate Cost/year to heat hot water tank</p>
Timeline	<p>Three weeks (12/15-01/12)</p>
Evaluation Methods	<p>Teacher Assessment</p> <p>Formal Lab Report</p> <p>Quizzes</p> <p>FRQ's and MC</p>
UNIT EXAM 2 01/18/12 100 MC Qs (Final Exam)	<p>(Cumulative Semester Exam)</p>

Scope and Sequence	Chapter 10: Land, Public and Private <ul style="list-style-type: none"> - Land management - Urban development
Readings & Note taking (at home assignment)	Read chapter 10 and take notes Research the changes Julia Butterfly Hill created (current events log) Read "The Lorax" by Dr. Seuss
Labs/Activities	"Tragedy of the Commons" Lab Review Vocabulary Math practice – Calculate Trees/acre Compare the global per capita meat consumption trends
Timeline	Two weeks (01/23-02/03)
Evaluation Methods	Teacher Assessment Formal Lab Report Quizzes FRQ's and MC

Scope and Sequence	<p>Chapter 11: Feeding the World</p> <ul style="list-style-type: none"> - Hunger - Malnutrition - Agriculture - Environmental impacts of different farming techniques - Bioaccumulation - Pesticides, fertilizers - Integrated Pest Management
Readings & Note taking (at home assignment)	<p>Read chapter 11 and take notes</p> <p>Research Organic farms in America (current events log)</p> <p>Research DDT</p>
Labs/Activities	<p>“Hunger Banquet” Lab</p> <p>Review Vocabulary</p> <p>Video: <i>Food, Inc.</i></p> <p>Math practice – Scatter Plot – Per Capita Meat consumption in US vs. Global</p> <p>Compare the global per capita meat consumption trends</p>
Timeline	Two weeks (02/06-02/17)
Evaluation Methods	<p>Teacher Assessment</p> <p>Formal Lab Report</p> <p>Quizzes</p> <p>FRQ’s and MC</p>
QUIZ 02/17/12	

Scope and Sequence	<p>Chapter 12: Nonrenewable Energy Resources</p> <ul style="list-style-type: none"> - Calculating projections for future nonrenewable supplies - Available nonrenewable resources - Energy consumption - Energy efficiency - Electricity generation - Petroleum: transport, extraction, advantages vs. disadvantages - Natural Gas: extraction, types - SOx emissions
Readings & Note taking (at home assignment)	<p>Read chapter 12 and take notes</p> <p>Half-Life Table</p> <p>Review electricity bill from home. Brainstorm ways to conserve energy(Current events log)</p> <p>Explain the difference between Renewable and Nonrenewable energy (Current events log)</p>
Labs/Activities	<p>Coal Investigations Lab</p> <p>Review Vocabulary</p> <p>Math Practice - Calculate energy of individual appliances, Calculate the BTU's of heat needed to generate electricity each day, Calculate the amount of CO₂ that each vehicle emits per year</p> <p>Video: Chernobyl Nuclear Disaster</p>
Timeline	Three weeks (02/21 -03/07)
Evaluation Methods	<p>Teacher Assessment</p> <p>Formal Lab Report</p> <p>Quizzes</p> <p>FRQ's and MC</p>

Scope and Sequence	<p>Chapter 13: Achieving Energy Sustainability</p> <ul style="list-style-type: none"> - Renewable Energy - Advantages and disadvantages of each type of energy - Biomass - Ethanol - Hydroelectric - Geothermal energy - Photovoltaic Systems
Readings & Note taking (at home assignment)	<p>Read chapter 13 and take notes</p> <p>Research “moon energy” (current events log)</p> <p>Research your assigned renewable energy source and answer questions(Create a poster)</p>
Labs/Activities	<p>Solar Energy Lab</p> <p>Review Vocabulary</p> <p>Math Practice – Scientific Notation practice – addition, subtraction, multiplication, division</p> <p>Calculate the power produced by coal burning power plant (kWh)</p>
Timeline	Three weeks (03/08 -03/23)
Evaluation Methods	<p>Teacher Assessment</p> <p>Formal Lab Report</p> <p>Quizzes</p> <p>FRQ’s and MC</p>
SPRING BREAK	(04/02 – 04/09)
TEST 03/16/12	
UNIT EXAM 3 03/30/12	<p>(Cumulative Sem B) 100 MCQs</p> <p>1st Barren’s Guide Practice Exam</p>

Scope and Sequence	<p>Chapter 14: Water Pollution</p> <ul style="list-style-type: none"> - Pollution (oil, water, air) - Clean wastewater - Nutrient release (eutrophication) - Sewage Treatment Plants - Green solutions
Readings & Note taking (at home assignment)	<p>Read chapter 14 and take notes Research the Clean Water Act (Current Events Log) Research – What are PCBs?(Current events log)</p>
Labs/Activities	<p>Waste and its effect on Carbon Dioxide Lab Review Vocabulary Math Practice – Calculate % Change Videos – <i>Water Quality, Erin Brockovich</i></p>
Timeline	<p>Two weeks (03/26 -04/13)</p>
Evaluation Methods	<p>Teacher Assessment Formal Lab Report Quizzes FRQ's and MC</p>

Scope and Sequence	<p>Chapter 15: Air Pollution and Stratospheric Ozone Depletion</p> <ul style="list-style-type: none"> - Indoor/outdoor pollutants, smog, ozone depletion - Causes/Effects - Chemical Formulas - Primary/secondary pollutants - Asbestos - Particulate matter - Major Pollutants – SO_x , NO_x,
Readings & Note taking (at home assignment)	<p>Read chapter 15 and take notes Research the Clean Air Act (Current events log) Cause/Effect (Venn Diagram)</p>
Labs/Activities	<p>Waste and its effect on Carbon Dioxide Lab Review Vocabulary Math practice – Calculating % Change Video – <i>Water Quality, Erin Brockovich</i> Field Trip – Waste water treatment plant</p>
Timeline	<p>One week (04/16 – 04/20)</p>
Evaluation Methods	<p>Teacher Assessment Formal Lab Report Quizzes FRQ's and MC</p>
Study for the last Barren's Practice Exam	<p>Barren's Practice Exam #2 90 min 100 MCQs</p>
APES EXAM MAY 7, 2012	
May 8-25	<p>Final Projects Due – Research and power points 20 Student service learning hours Use project rubric</p>

Scope and Sequence	<p>Chapter 16: Waste Generation and Waste Disposal</p> <ul style="list-style-type: none"> - 3 R's – reduce, reuse, recycle - Incineration - Landfills - Hazardous waste - CERCLA, RCRA - Composting
Readings & Note taking (at home assignment)	<p>Read chapter 16 and take notes Enter a pledge to use a reusable water bottle (explain why this is important) Research how a landfill works (current events log) Explain how you recycle in your community/home(current events log)</p>
Labs/Activities	<p>What's in our Waste Lab Review Vocabulary Math practice – Calculate the amount of waste produced in one year by the Draper family.</p>
Timeline	<p>One week (04/23-04/26)</p>
Evaluation Methods	<p>Teacher Assessment Formal Lab Report Quizzes FRQ's and MC</p>

Scope and Sequence	<p>Chapter 17: Human Health and Environmental Risks</p> <ul style="list-style-type: none"> - Infectious Disease - Toxic chemicals - Risk analysis
Readings & Note taking (at home assignment)	<p>Read chapter 17 and take notes</p> <p>Take a home inventory of the chemicals under the sink and in the garage. List the type of chemical, the human health effect, and the environmental effect.</p>
Labs/Activities	<p>Brine Shrimp Lab LD - 50</p> <p>Review Vocabulary</p> <p>Math practice – Calculate the amount of pesticide that would be considered safe for humans to ingest if the body mass is 200 mg/kg.</p>
Timeline	<p>One week (04/27-05/02)</p>
Evaluation Methods	<p>Teacher Assessment</p> <p>Formal Lab Report</p> <p>Quizzes</p> <p>FRQ's and MC</p>

Scope and Sequence	<p>Chapter 18: Conservation of Biodiversity</p> <ul style="list-style-type: none"> - Causes of biodiversity - Laws that protect species - Native, Alien, exotic, invasive species - Climate change
Readings & Note taking (at home assignment)	<p>Read chapter 18 and take notes</p> <p>What does HIPCO stand for? (current events log)</p> <p>Explain the Endangered Species Act (current events log)</p> <p>Research an endangered species. Describe how this species became endangered. (current events log)</p>
Labs/Activities	<p>Wanted Poster Lab</p> <p>Review Vocabulary</p> <p>Math practice - Calculation % increase of terrestrial species.</p>
Timeline	SPRING BREAK PROJECT
Evaluation Methods	<p>Teacher Assessment</p> <p>Formal Lab Report</p> <p>Quizzes</p> <p>FRQ's and MC</p>
SPRING BREAK ASSIGNMENT	<p>(04/02 – 04/09)</p> <p>**POSTER DUE ON 04/10/12</p>

Scope and Sequence	<p>Chapter 19: Global Change</p> <ul style="list-style-type: none"> - Climate change - Global warming - Changes in Carbon Dioxide and Temperature - Positive and Negative Feedback - Greenhouse effect -
Readings & Note taking (at home assignment)	<p>Read chapter 19 and take notes</p> <p>Research another animal (not polar bears) that is thought to be endangered or has gone extinct because of climate change.(current event log)</p> <p>What are the benefits of installing compact fluorescent light bulbs in homes? (current events log)</p>
Labs/Activities	<p>Climate Change Lab</p> <p>Review Vocabulary</p> <p>Math practice - Calculate the expected increase in sea level, in meters, for different lengths of time (10 yrs., 200 yrs.)</p>
Timeline	<p>One Week (05/02-05/06)</p>
Evaluation Methods	<p>Teacher Assessment</p> <p>Formal Lab Report</p> <p>Quizzes</p> <p>FRQ's and MC</p>

Scope and Sequence	<p>Chapter 20: Sustainability, Economics, and Equity</p> <ul style="list-style-type: none"> - Cost of economic activity on the environment and human well-being - Laws to protect the environment and human beings - Anthropocentric - World Agencies
Readings & Note taking (at home assignment)	<p>Read chapter 20 and take notes</p> <p>Read opening story. Make a chart of the benefits and costs of the maquiladora industry. Describe ways in which they might be able to increase the benefits and decrease the costs. (current events log)</p>
Labs/Activities	<p>Re-create Table 20.1 on page 562 in your textbook.</p> <p>Review Vocabulary</p>
Timeline	<p>SPRING BREAK PROJECT</p> <p>One week</p>
Evaluation Methods	<p>Teacher Assessment</p> <p>Formal Lab Report</p> <p>Quizzes</p> <p>FRQ's and MC</p>
SPRING BREAK ASSIGNMENT	<p>(04/02 – 04/09)</p> <p>TABLE DUE ON 04/10/12</p>