

AP Environmental Science
FORSYTH COUNTY COURSE SYLLABUS
2013-2014

COURSE TITLE:	AP Environmental Science		
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Course Description:

This course conforms to College Board topics for the Advanced Placement Environmental Science Examination. The major themes for this course as indicated by the AP Environmental Science course guide include Earth systems and resources, the living world, populations, land and water use, energy resources and consumption, pollution, and global change. Students are expected to take the AP exam in May. This course requires a rigorous college level lab component and utilizes a college text.

Standards: *Course Standards can be found at www.georgiastandards.org.*

1SCSh1. Students will evaluate the importance of curiosity, honesty, openness, and skepticism in science.

1SCSh2. Students will use standard safety practices for all classroom laboratory and field investigations.

1SCSh3. Students will identify and investigate problems scientifically.

1SCSh4. Students use tools and instruments for observing, measuring, and manipulating scientific equipment and materials.

1SCSh5. Students will demonstrate the computation and estimation skills necessary for analyzing data and developing reasonable scientific explanations.

1SCSh6. Students will communicate scientific investigations and information clearly.

1SCSh7. Students analyze how scientific knowledge is developed.

1SCSh8. Students will understand important features of the process of scientific inquiry.

1SEV1. Students will investigate the flow of energy and cycling of matter within an ecosystem and relate these phenomena to human society.

1SEV2. Students will demonstrate an understanding that the Earth is one interconnected system.

1SEV3. Students will describe stability and change in ecosystems.

1SEV4. Students will understand and describe availability, allocation and conservation of energy and other resources

1SEV5. Students will recognize that human beings are part of the global ecosystem and will evaluate the effects of human activities and technology on ecosystems.

Course Materials:

1 1/2" three ring binder, loose leaf paper, pen (blue or black), pencil, colored pencils, pack of index cards, glue stick(s), dividers for notebook – (sections: reading outlines, lecture notes, activities and labs, graded assignments, returned tests & quizzes)

****Strongly recommended: USB drive and Microsoft PowerPoint.***

Learning Resources/Textbook(s):**Textbook:**

Living in the Environment, 15th Ed. 2007. By Miller. Thomas Learning. Cost \$100.00.

Summer Reading Assignment:

Check the schools website, choose one of the books and complete the assignment

AP Examination Review:

Barron's AP Environmental Science newest edition

Kaplan's AP Environmental Science newest edition

Course Outline:

Topic/Activities	Duration
<p>I. Interdependence of Earth's Systems: Fundamental Principles and Concepts. Chapter 1.</p> <ul style="list-style-type: none"> a. Something Fishy lab: goldfish crackers are used to simulate mark and recapture. b. Tragedy of Commons lab: lab focusing on the Earth's common resources. c. Footprint: Ecological footprint calculator. Students use web site to determine their ecological impact. (http://www.ecologyfund.com/registry/ecology/res_bestfoot.html) d. Video: Lorax / Truax book 	2 weeks
<p>II. Scientific Principles: Matter and Flow of Energy Chapter 2.</p> <ul style="list-style-type: none"> a. Scientific methods lab: Students will use the soil salinization lab to test their scientific skills. b. Cats in Borneo activity c. A Vital Commodity Lab: Beans are used to simulate transfer of a "vital" commodity-ENERGY. 	2 weeks
<p>III. Ecosystems and How they Work. Chapters 6 & 9.</p> <ul style="list-style-type: none"> a. Nutrient Cycling Posters: Students work in groups of 4 to create a poster of their assigned nutrient cycle. b. Owl Pellets Lab: assemble skeletons and calculate biomass required to support predator. c. Hawks, Rabbits & Grass lab d. Diagram several different Food Web's using both land and aquatic ecosystems. e. Environmental Legislation project: students will research assigned environmental legislation and present findings at the end of the first semester. 	3 weeks

<u>Topic/Activities</u>	<u>Duration</u>
IV. Climate, Weather, Biomes	2 weeks
Chapter 8.	
a. Biomes: Students are divided into groups of two and are assigned a biome to make a PowerPoint presentation on.	
b. Climatograms: students design climatograms of assigned biomes based on precipitation and temperature.	
c. Micrometeorology: students study the effects of weather in a specific locality using data found at the NOAA website.	
V. Management of ecosystems	1 week
Chapter 6	
a. Case Study: Oak Clearcutting: To Cut or Not to Cut? A Debate Case	
VI. Sustaining Biodiversity	2 weeks
Chapters 7	
a. Presentation: students will produce a PowerPoint presentation on an assigned endangered species. The presentation is to include why it is considered endangered and what is being done to help it.	
b. Case Study: Can Suminoe Oysters Save Chesapeake Bay?	
VII. Population Dynamics	1 week
Chapter 3	
a. Graphing population trends for several different species	
b. Population distribution and Survivorship Lab: Using cemetery data from headstones, students will determine mortality rate produce survivorship curves for local populations.	
VIII. Human Populations	2 weeks
Chapter 4	
a. Graphing: students will be given three sets of data on global human population trends that they will graph and debate on which curve they believe is most likely to come true.	
VIII. Geology: The Earth and nonrenewable Minerals and Soil.	2 weeks
Chapter 5 & 26.	
a. Plate tectonics Lab: students use paper models of divergent, convergent and transform plate boundaries to simulate the movement of the crustal plates on Earth's surface.	
b. Chemical weathering Lab: students recreate the effects of chemical weathering on rocks of different composition.	
c. Soil Lab: students collect soil from different locations and perform physical and chemical measurements. N-P-K, organic content soil tests etc.	

Topic/Activities	Duration
IX. Renewable and Nonrenewable Resources	
Water:	2 weeks
Chapter 20	
a. Personal water Usage: students keep track of their water usage for a week and analyze their impacts on the environment.	
b. Biodegradable Materials and their dissolved oxygen Lab:	
c. Field Trip to Water Treatment Plant.	
Land - Food Resources:	2 weeks
Chapter 11 & 12	
a. Effects of Radiation Lab: students will analyze the effect radiation has on the germination of seeds. Uses seeds that have been irradiated. Wards lab kit.	
Land – Urban Land Use	1 week
Chapter 28	
a. Presentation: Land use activity: Given certain parameters, students design an environmentally friendly townships and present their creations to the class.	
Pesticides and Pest Control	1 week
Chapter 23	
a. Pesticide table: students will use the internet to fill in a table that contains it uses and any resistance.	
Energy – Nonrenewable	2 weeks
Chapter 16, 17, & 19	
a. Cookie Mining: Use chocolate chip cookies and toothpicks to do a mining simulation activity.	
b. Fossil Fuels: students keep a weekly record of their driving habits and calculate total fossil fuels used and extrapolate for a life time of driving.	
c. Oil Resources and Reserves activity.	
Energy – Renewable	1 week
Chapter 18.	
a. Project: Alternative Energy Sources. Groups of two will produce a PowerPoint presentation on alternative sources of energy.	
b. Field Trip to local power plant.	
X. Environmental Quality	
Air Pollution	1 week
Chapter 23 & 24	
a. Air Pollution Analysis	
b. Vehicle pollution internet assignment: students compare various models of cars and rate their pollution levels using http://fueleconomy.gov/ .	
c. Testing for tropospheric ozone pollution Lab: Use potassium iodide/corn starch mixture to test local ozone levels.	

Topic/Activities	Duration
Climate Change and Ozone Loss Chapter 25	1 week
a. Your contribution to global warming & what you can do about it	
b. Video: Inconvenient Truth.	
Water Pollution Chapter 21	1 week
a. Water quality lab: Using test kits, students measure chemical physical parameters of water from different water collection sites.	
Solid and Hazardous Waste Chapter 29	1 week
a. Recycling internet activity: www.epa.gov/recyclecity/mainmap.htm .	
Toxicology and Human Health Chapter 15	2 weeks
a. LD-50 Lab: students check the effect of common household chemicals on brine shrimp and calculate the LD-50 levels.	
b. Research paper: students will research one viral and one bacterial human disease and write a one page paper on each.	
XII. Environmental Economics, Politics & Ethics Chapters 27 & 30	2 weeks
XIII. AP Exam Review	2 weeks
a. Students will take sample AP tests, take open-book review tests and review special topics. Chapter summaries will be given and other review materials. Saturday review sessions may be offered.	

*****NOTE:** Sequence may change in which topics are covered in order to enhance the efficiency and effectiveness of the course.

Availability for Extra Help:

I am available for help before and after school by appointment and during my conference periods which are 1st and 5th periods.

Makeup Work:

All missed work and assessments are the responsibility of the student when they are absent from school. A student who is absent on the class day before a regularly scheduled assessment will be responsible for completing the assignment on the regularly scheduled day and time. Students who have been absent more than two consecutive days (including the assessment day) will be given five (5) school days to make up the assessment and/or other assignments. This does not include major projects, research papers, etc., where the deadline has been posted in advance. The teacher has the discretion to grant a longer period of time to make up work if there are extenuating circumstances.

Late Work:

Late work will be accepted, but the highest grade that can be earned is a 70%. **One day late will result in a maximum of a 70%. Anything turned in two or more days late will receive a maximum grade of 50%.** Late work must be turned in before the end of the current unit of study. After this point, late work will no longer be accepted for a grade.

Grading Calculations:

Course Average = 50% (1ST Sem. Course Work) + 50% (2ND Sem. Course Work)

1ST & 2ND Semester Course Work = 75% Summative + 25% Formative

Concept of formative assessment: <http://pareonline.net/getvn.asp?v=8&n=9>

Grading Policy:

A = 90 – 100

B = 80 – 89

C = 70 – 79

Failing = Below 70

*****Parents are strongly encouraged to use the “Parent Portal” system to monitor student progress!*****

Test Format:

Tests will examine your ability to recall information and apply the knowledge. Tests will have two sections: multiple choice (60%) and an FRQ (40%). If you miss a test due to an excused absence, you must see me on the day you return. See example questions below:

<p>Multiple Choice: According to the World Bank what is the predicted stabilization number for the worldwide population? A. 11 billion B. 9 billion C. 8 billion D. 15 billion</p>
<p>FRQ: Answer parts of the questions The 1990 United States census revealed that for the first time, a majority of Americans live in suburbs of major cities or in suburban-like communities. A. List three factors why this trend may not be sustainable from a resource point of view. B. Explain why each of the three reasons you have listed is not sustainable and the possible consequences of each. C. What national public policy decisions made the United States into a suburban country as opposed to Europe that is largely urbanized? D. Many environmentalists think the 21st century as the “Century of the City.” State whether or not you agree or disagree with this statement and include three reasons as support.</p>

**Formative Assessments include, but are not limited to homework, class work, practice tests, rough drafts, and sections of projects/research papers/presentations.*

**Summative Assessments include, but are not limited to unit tests & Quizzes, final projects, final essays, final research papers, and final presentations.*

High School
Work Habit Categories and Scoring
1: Does not meet 2: Meets 3: Exceeds

Responsibility (RE)

The student adapts to classroom practices.

1. Requires frequent redirection; strays off-task; disrupts learning environment; fails to follow class procedures.
- 2. Is a self-starter; remains on-task; asks questions for clarifications when needed; applies strategies for meeting learning goals; follows class procedures.**
3. Displays independent initiative; maximizes opportunities; solves problems.

Participation (PA)

The student pursues learning through active involvement.

1. Disengages from the learning environment; responds only to teacher prompts.
- 2. Engages in activities and discussions.**
3. Leads others to participate; explores new class ideas and approaches.

Assignment Completion (AC)

The student completes work by the designated time/date and according to directions.

1. Fails to complete assignments or submit work; struggles to follow directions.
- 2. Produces completed work on a consistent basis by the designated time/date; follows directions.**
3. Demonstrates new applications and examples of standard; exceeds assignment expectations; extends personal learning.

Interpersonal Skills (IS)

The student interacts with others to create a positive learning environment.

1. Lacks flexibility when working with peers; isolates self.
- 2. Works well with peers; listens and speaks respectfully; questions ideas rather than the person.**
3. Adjusts to a variety of classroom roles; mediates; influences others to learn.

AP Environmental Science Syllabus Acknowledgment:

I have read and understand the requirements and policies presented in the syllabus.

Student Name (PLEASE PRINT) _____

Student Signature _____ Date _____

Parent Signature _____ Date _____