

Course Description – AP Environmental Science

The AP Environmental Science course is designed to be the equivalent of a one-semester, introductory college course in environmental science. The goal of the AP Environmental Science is to provide students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world, to identify and analyze environmental problems both natural and human-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving and/or preventing them.

Environmental Science is interdisciplinary; it embraces a wide variety of topics from different areas of study. There are several major unifying themes that cut across the many topics included in the study of environmental science. The following themes provide a foundation for the structure of the AP Environmental Science Course:

Science is a process.

- Science is a method of learning more about the world.
- Science constantly changes the way we understand the world.

Energy conversions underlie all ecological processes.

- Energy cannot be created; it must come from somewhere.
- As energy flows through systems, at each step more of it becomes unusable.

The Earth itself is one interconnected system.

- Natural systems change over time and space.
- Biogeochemical systems vary in ability to recover from disturbances.

Humans alter natural systems.

- Humans have had an impact on the environment for millions of years.
- Technology and population growth have enabled humans to increase both the rate and scale of their impact on the environment.

Environmental problems have a cultural and social context.

- Understanding the role of cultural, social, and economic factors is vital to the development of solutions.

Human survival depends on developing practices that will achieve sustainable systems.

- A suitable combination of conservation and development is required.
- Management of common resources is essential.

COURSE EXPECTATIONS

Course Requirements:

AP Environmental Science is a 1 Credit, College-Level course. It is designed for grade levels 11-12. The prerequisites include completion of two laboratory sciences, one being a life science and one being a physical science. This class will include quantitative analysis; therefore, at least one year of algebra should be completed. Also students who have completed Earth

Science have gained prior knowledge of AP course. Students are required to take the AP Examination. Classes are held for 90 minutes every other day.

Grading Rationale:

Percentage of Nine Weeks Grade

Homework	minimum of 10	10%
Classwork	minimum of 9	20%
Quizzes/Projects	minimum of 7	30%
Tests	minimum of 5	40%

Grading Scale

A	100-92%	Outstanding Progress, superior work
B	91-83%	Good, better than average progress
C	82-74%	Average progress
D	73-65%	Poor, but passing
F	Below 65%	Unsatisfactory
I	Incomplete	Work must be made up

Textbook:

Living in the Environment. G. Tyler Miller; 13ed.

Materials:

- o 1 ½ to 2 inch 3 ring binder
- o Loose leaf paper
- o Pencils, #2
- o Pens, blue or black only
- o Graphing calculator
- o Laboratory/Field Journal

STANDARDS OF LEARNING

The following outline of major topics serves to describe the scope of the AP Environmental Science course and exam. The order of topics in the outline holds no special significance, since there are many different sequences in which the topics can be appropriately addressed in the course. The percentage after each major topic heading shows the approximate proportion of multiple-choice questions on the examination that pertain to that heading; thus the percentage also indicates the relative emphasis that should be placed on the topics in the course.

I. Earth Systems and Resources (10-15%)

A. Earth Science Concepts: Geologic time scale; plate tectonics; earthquakes; volcanism; seasons; solar intensity and latitude

A. The Atmosphere: Composition; structure; weather and climate; atmospheric circulation and the Coriolis Effect; atmosphere-ocean interactions; ENSO

B. Global Water Resources and Use: freshwater/saltwater; ocean circulation; agricultural, industrial, and domestic use; surface and groundwater issues; global problems; conservation

C. Soil and Soil Dynamics: Rock cycle; formation; composition; physical and chemical properties; main soil types; erosion and other soil problems; soil conservation

II. The Living World (10-15%)

A. Ecosystem Structure: Biological populations and communities; ecological niches; interactions among species; keystone species; species diversity and edge effects; major terrestrial and aquatic biomes

B. Energy Flow: Photosynthesis and cellular respiration; food webs and trophic levels; ecological pyramids

C. Ecosystem Diversity: Biodiversity; natural selection; evolution; ecosystem services

D. Natural Ecosystem Change: Climate shifts; species movement; ecological succession

E. Natural Biogeochemical Cycles: Carbon; nitrogen; phosphorus; sulfur; water; conservation of matter

III. Population (10-15%)

A. Population Biology Concepts: population ecology; carrying capacity; reproductive strategies; survivorship

B. Human Population

1. Human population dynamics: historical population sizes; distribution; fertility rates; growth rates and doubling times; demographic transition; age-structure diagrams
2. Population size: Strategies for sustainability; case studies; national policies
3. Impacts of population growth: Hunger; disease; economic effects; resource use; habitat destruction

IV. Land and Water Use (10-15%)

A. Agriculture

1. Feeding a growing population: Human nutritional requirements; types of agriculture; Green Revolution; genetic engineering and crop production; deforestation; irrigation; sustainable agriculture
1. Controlling pests: Types of pesticides; costs and benefits of pesticide use; integrated pest management; relevant laws

B. Forestry: Tree plantations; old growth forests; forest fires; forest management; national forests

A. Rangelands: Overgrazing; deforestation; desertification; rangeland management; federal rangelands

B. Other Land Use

1. Urban land development: Planned development; suburban sprawl; urbanization
2. Transportation infrastructure; Federal highway system; canals and channels; roadless areas; ecosystem impacts
3. Public and federal lands: management; wilderness areas; national parks; wildlife refuges; forests; wetlands

4. Land conservation options: preservation; remediation; mitigation; restoration
 5. Sustainable land-use strategies
- E. Mining: Mineral formation; extraction; global reserves; relevant laws and treaties
- F. Fishing: Fishing techniques; over-fishing; aquaculture; relevant laws and treaties
- G. Global economics: Globalization; World Bank; Tragedy of the Commons; relevant laws and treaties

V. Energy Resources and Consumption (10-15%)

A. Energy Concepts: Energy forms; power; units; conversions; Laws of Thermodynamics

B. Energy Consumption:

1. History: Industrial Revolution; exponential growth; energy crisis
2. Present global energy use
3. Future energy needs

B. Fossil Fuel Resources and Use: Formation of coal, oil, and natural gas; extraction/purification methods; world reserves and global demand; synfuels; environmental advantages/disadvantages of sources

C. Nuclear Energy: Nuclear fission process; nuclear fuel; electricity production; nuclear reactor types; environmental advantages/disadvantages; safety issues; radiation and human health; radioactive wastes; nuclear fusion

D. Hydroelectric power: Dams; flood control; salmon; silting; other impacts

E. Energy Conservation: Energy efficiency; CAFÉ standards; hybrid electric vehicles; mass transit

F. Renewable Energy: Solar energy; solar electricity; hydrogen fuel cells; biomass; wind energy; small-scale hydroelectric; ocean waves and tidal energy; geothermal; environmental advantages/disadvantages

VI. Pollution (25-30%)

A. Pollution Types

1. Air pollution: Sources-primary and secondary; major air pollutants; measurement units; smog; acid deposition-causes and effects; heat islands and temperature inversions; indoor air pollution; remediation and reduction strategies; clean Air Act and other relevant laws
2. Noise pollution: Sources; effects; control measures
3. Water pollution: Types; sources; causes and effects; cultural eutrophication; groundwater pollution; maintaining water quality; water purification; sewage treatment/septic systems; Clean Water Act and other relevant laws
4. Solid Waste: Types; disposal; reduction

B. Impacts on the Environment and Human Health

1. Hazards to human health: Environmental risk analysis; acute and chronic effects; dose-response relationships; air pollutants; smoking and other risks
2. Hazardous chemicals in the environment: Types of hazardous wastes; treatment/disposal of hazardous waste; cleanup of contaminated sites; biomagnification; relevant laws

C. Economic Impacts: Cost-benefit analysis; externalities; marginal costs; sustainability

VII. Global Change (10-15%)

B. Stratospheric Ozone: Formation of stratospheric ozone; ultraviolet radiation; causes of ozone depletion; effects of ozone depletion; strategies for reducing ozone depletion; relevant laws and treaties

C. Global Warming: Greenhouse gases and the greenhouse effect; impacts and consequences of global warming; reducing climate change; relevant laws and treaties

D. Loss of Biodiversity: Habitat loss; overuse; pollution; introduced species; endangered and extinct species; maintenance through conservation; relevant laws and treaties

SCOPE AND SEQUENCE -

ORGANIZED TOPICS	ESSENTIAL KNOWLEDGE AND SKILLS	S.O.L.	ACTIVITIES	TIME FRAME (month and # of blocks)	RESOURCES
Unit 1: Introduction, History, and Science					
Ch. 1: Environmental Problems, Their Causes, and Sustainability	<p>Human population dynamics: historical population sizes; distribution; fertility rates; growth rates and doubling times; demographic transition; age-structure diagrams</p> <p>Population size: Strategies for sustainability; case studies; national policies</p> <p>Impacts of population growth: Hunger; disease; economic effects; resource use; habitat destruction</p> <p>Global economics: Globalization; World bank; Tragedy of the Commons; relevant laws and treaties</p>	<p>III. Population: B.1, 2, 3</p> <p>IV. Land and Water Use: G</p>	<ul style="list-style-type: none"> ❖ EcoEthics Activity ❖ <i>Tragedy of the Commons</i> ❖ Tragedy of the Commons Lab ❖ Film “The Lorax” ❖ Film “American Experience: Endangered Planet” ❖ Sidewalk Ecology- field lab 	September 3 blocks	Ch. 1: pgs 2-20
Ch. 2: Environmental History	<p>Agriculture: Feeding a growing population: Human nutritional requirements; types of agriculture; Green Revolution; genetic engineering and crop production; deforestation; irrigation; sustainable agriculture</p> <p>Forestry: Tree plantations; old growth forests; forest fires; forest management; national forests</p>	<p>IV. Land and Water Use: A.1, B, C, D. 3, 4, 5</p>	<ul style="list-style-type: none"> ❖ Ch. 2 Study Guide Questions ❖ Ecowalk- field ❖ Students research a historical figure in the different environmental movements ❖ John Muir “Hetchy Hetch Valley”- required reading 	September 4 blocks	Ch. 2: pgs 21-39

ORGANIZED TOPICS	ESSENTIAL KNOWLEDGE AND SKILLS	S.O.L.	ACTIVITIES	TIME FRAME (month and # of blocks)	RESOURCES
Ch. 3: Science, Systems, Matter, and Energy	<p>Rangelands: Overgrazing; deforestation; desertification; rangeland management; federal rangelands</p> <p>Public and federal lands: management; wilderness areas; national parks; wildlife refuges; forests; wetlands</p> <p>Land conservation options: preservation; remediation; mitigation; restoration</p> <p>Sustainable land-use strategies</p>	V. Energy Resources and Consumption: A	<ul style="list-style-type: none"> ❖ Controls and Variables ❖ Thermodynamics lab- indoor ❖ Student inquiry lab- Ruined Radishes: students are given a materials list and they must come up with hypothesis, variables, experimental procedures, etc. 	September 5 blocks	Ch. 3: pgs 40-63
<i>Unit 2: Ecosystems, Evolution, Biogeography, Ecology</i>					
Ch. 4: Ecosystems	Ecosystem Structure: Biological populations and communities; ecological niches; interactions among species; keystone species; species diversity and edge effects; major terrestrial and aquatic biomes	II. The Living World: A, B, E	<ul style="list-style-type: none"> ❖ Taxonomy Activity ❖ Pacing Activity ❖ Quadrat Sampling- field ❖ Measurement of Primary Productivity and Net Primary Productivity in Plants- some field ❖ Winogradsky Column 	September / October 6 blocks	Ch. 4: pgs 64-94

ORGANIZED TOPICS	ESSENTIAL KNOWLEDGE AND SKILLS	S.O.L.	ACTIVITIES	TIME FRAME (month and # of blocks)	RESOURCES
	<p>Energy Flow: Photosynthesis and cellular respiration; food webs and trophic levels; ecological pyramids</p> <p>Natural Biogeochemical Cycles: Carbon; nitrogen; phosphorus; sulfur; water; conservation of matter</p>		<ul style="list-style-type: none"> ❖ “Lake Victoria” current event required reading 		
Ch. 5: Evolution and Biodiversity	Ecosystem Diversity: Biodiversity; natural selection; evolution; ecosystem services	II. The Living World: C	<ul style="list-style-type: none"> • Shannon-Wiener Diversity Index-field ❖ “Cane Toads” film 	October 5 blocks	Ch. 5: pgs 95-109
Ch. 6: Biogeography: Climate, Biomes, and Terrestrial Biodiversity	<p>Ecosystem Diversity: Biodiversity; natural selection; evolution; ecosystem services</p> <p>Natural Ecosystem Change: Climate shifts; species movement; ecological succession</p> <p>Earth Science Concepts: Geologic time scale; plate tectonics; earthquakes; volcanism; seasons; solar intensity and latitude</p> <p>The Atmosphere: Composition; structure; weather and climate; atmospheric circulation and the Coriolis Effect; atmosphere-ocean interactions; ENSO</p>	II. The Living World: C, D I. Earth Systems and Resources: A, B	<ul style="list-style-type: none"> ❖ Climatogram Activity ❖ Biomes Grid Activity ❖ Biomes Travel Brochure ❖ Island Biogeography lab 	October 5 blocks	Ch. 6: pgs 110-143
Ch. 7: Aquatic Ecology	Ecosystem Structure: Biological populations and communities; ecological niches; interactions	II. The Living World: A	<ul style="list-style-type: none"> ❖ Ch. 7 Study Guide ❖ Upwelling and Downwelling ❖ Sharks Conservation Issue 	October 5 blocks	Ch. 7: pgs 144-164

ORGANIZED TOPICS	ESSENTIAL KNOWLEDGE AND SKILLS	S.O.L.	ACTIVITIES	TIME FRAME (month and # of blocks)	RESOURCES
Ch. 8: Community Ecology	among species; keystone species; species diversity and edge effects; major terrestrial and aquatic biomes Ecosystem Structure: Biological populations and communities; ecological niches; interactions among species; keystone species; species diversity and edge effects; major terrestrial and aquatic biomes	II. The Living World: A	❖ Human Impacts on Estuaries ❖ Beaches or Bedrooms ❖ Exotic Species Project ❖ Good Buddies Project	October / November 5 blocks	Ch. 8: pgs 165-189
Unit 3: Populations					
Ch. 9: Population Dynamics, Carrying Capacity, and Conservation Biology	Ecosystem Structure: Biological populations and communities; ecological niches; interactions among species; keystone species; species diversity and edge effects; major terrestrial and aquatic biomes Natural Ecosystem Change: Climate shifts; species movement; ecological succession	II. The Living World: A, D	❖ Ch. 9 Study Guide ❖ Population exponential growth lab	November 3 blocks	Ch. 9: pgs 190-202
Ch. 12: The Human Population	Human population dynamics: historical population sizes; distribution; fertility rates; growth rates and doubling times; demographic transition; age-structure diagrams Population size: Strategies for sustainability; case studies; national policies	III. Population: B.1, 2, 3	❖ Ch. 12 Study Guide ❖ Human Population Exercise ❖ Coastal Population Growth Conservation Issue ❖ Population Growth Pyramids: Age Structure Diagrams analysis ❖ "World in Balance" film	November 6 blocks	Ch 12: pgs 254-276

ORGANIZED TOPICS	ESSENTIAL KNOWLEDGE AND SKILLS	S.O.L.	ACTIVITIES	TIME FRAME (month and # of blocks)	RESOURCES
Unit 4: Resources					
Ch. 13: Food Resources	<p>Impacts of population growth: Hunger; disease; economic effects; resource use; habitat destruction</p> <p>Agriculture: Feeding a growing population: Human nutritional requirements; types of agriculture; Green Revolution; genetic engineering and crop production; deforestation; irrigation; sustainable agriculture</p> <p>Controlling pests: Types of pesticides; costs and benefits of pesticide use; integrated pest management; relevant laws</p> <p>Rangelands: Overgrazing; deforestation; desertification; rangeland management; federal rangelands</p> <p>Fishing: Fishing techniques; over-fishing; aquaculture; relevant laws and treaties</p>	IV. Land and Water Use: A. 1, 2: C, F	<ul style="list-style-type: none"> ❖ Arable land lab ❖ "Super Size Me" film ❖ Hunger Banquet ❖ Food Pyramid lab 	November 4 blocks	Ch. 13: pgs 277-311

ORGANIZED TOPICS	ESSENTIAL KNOWLEDGE AND SKILLS	S.O.L.	ACTIVITIES	TIME FRAME (month and # of blocks)	RESOURCES
Ch. 14: Water Resources	<p>Global Water Resources and Use: freshwater/saltwater; ocean circulation; agricultural, industrial, and domestic use; surface and groundwater issues; global problems; conservation</p> <p>Hydroelectric power: Dams; flood control; salmon; silting; other impacts</p> <p>Fishing: Fishing techniques; over-fishing; aquaculture; relevant laws and treaties</p>	<p>I. Earth Systems and Resources: C</p> <p>IV. Land and Water Use: F</p> <p>V. Energy Resources and Consumption: E</p>	<ul style="list-style-type: none"> ❖ Ch. 14 Study Guide ❖ Water Use Survey ❖ Biodegradable Materials and their Effect on Dissolved Oxygen ❖ "Great Wall Across the Yangtze River" film 	<p>November/December 5 blocks</p>	<p>Ch. 14: pgs 312-337</p>
Unit 5: Geology and Energy					
Ch. 10: Geology	<p>Earth Science Concepts: Geologic time scale; plate tectonics; earthquakes; volcanism; seasons; solar intensity and latitude</p> <p>Soil and Soil Dynamics: Rock cycle; formation; composition; physical and chemical properties; main soil types; erosion and other soil problems; soil conservation</p>	<p>I. Earth Systems and Resources: A, D</p>	<ul style="list-style-type: none"> ❖ Ch. 10 Study Guide ❖ Rock Classification Activity ❖ Plate Tectonics Lab ❖ Soil Lab- field analysis ❖ "The Core" film 	<p>December 6 blocks</p>	<p>Ch 10: 203-227</p>
Ch. 15: Geologic Resources	<p>Mining: Mineral formation; extraction; global reserves; relevant laws and treaties</p> <p>Energy Consumption: History -Industrial Revolution; exponential</p>	<p>IV. Land and Water Use: E</p> <p>V. Energy Resources and</p>	<ul style="list-style-type: none"> ❖ Ch. 15 Study Guide ❖ Cookie Mining Lab ❖ Identification of nuclear plant parts lab ❖ "Meltdown at Three Mile Island" film 	<p>December/January 5 blocks</p>	<p>Ch. 15: pgs 338-379</p>

ORGANIZED TOPICS	ESSENTIAL KNOWLEDGE AND SKILLS	S.O.L.	ACTIVITIES	TIME FRAME (month and # of blocks)	RESOURCES
Ch. 16: Energy Efficiency and Renewable Energy	<p>growth; energy crisis; Present global energy use; Future energy needs</p> <p>Fossil Fuel Resources and Use: Formation of coal, oil, and natural gas; extraction/purification methods; world reserves and global demand; synfuels; environmental advantages/disadvantages of sources</p> <p>Nuclear Energy: Nuclear fission process; nuclear fuel; electricity production; nuclear reactor types; environmental advantages/disadvantages; safety issues; radiation and human health; radioactive wastes; nuclear fusion</p> <p>Energy Conservation: Energy efficiency; CAFE standards; hybrid electric vehicles; mass transit</p> <p>Renewable Energy: Solar energy; solar electricity; hydrogen fuel cells; biomass; wind energy; small-scale hydroelectric; ocean waves and tidal energy; geothermal; environmental advantages/disadvantages</p>	<p>Consumption: B.1, 2, 3; C, D, F</p> <p>V. Energy Resources and Consumption: G</p>	<ul style="list-style-type: none"> ❖ United streaming film on “Chernobyl” ❖ Yucca Mountain required reading ❖ Energy Problems lab ❖ Energy Problem Solutions lab ❖ Designing Solar Cookers lab ❖ Design a “Green” or eco friendly Home ❖ Energy conversions practice 	<p>January 5 blocks</p>	<p>Ch. 16: pgs 380-416</p>

Unit 6: Pollution

ORGANIZED TOPICS	ESSENTIAL KNOWLEDGE AND SKILLS	S.O.L.	ACTIVITIES	TIME FRAME (month and # of blocks)	RESOURCES
Ch. 17: Air and Air Pollution	<p>Air pollution: Sources-primary and secondary; major air pollutants; measurement units; smog; acid deposition-causes and effects; heat islands and temperature inversions; indoor air pollution; remediation and reduction strategies; clean Air Act and other relevant laws</p> <p>Noise pollution: Sources; effects; control measures</p>	VI. Pollution: A.1, 2	<ul style="list-style-type: none"> ❖ Ch. 17 Study Guide ❖ Lichen as Air Quality Indicators- field ❖ Air Particulate lab- indoors 	January/February 6 blocks	Ch. 17: pgs 418-445
Ch. 18: Climate Change and Ozone Loss	<p>Stratospheric Ozone: Formation of stratospheric ozone; ultraviolet radiation; causes of ozone depletion; effects of ozone depletion; strategies for reducing ozone depletion; relevant laws and treaties</p> <p>Global Warming: Greenhouse gases and the greenhouse effect; impacts and consequences of global warming; reducing climate change; relevant laws and treaties</p>	VII. Global Change: A, B	<ul style="list-style-type: none"> ❖ Ch. 18 Study Guide ❖ CO₂ Diet ❖ Ozone testing lab- indoors ❖ Global Warming and Sea Levels ❖ Evidence for Climate Change ❖ "Day After Tomorrow" film ❖ "Inconvenient Truth" film ❖ Graphing Greenhouse gases-analysis 	February 6 blocks	Ch. 18: pgs 446-482
Ch. 19: Water Pollution	<p>Water pollution: Types; sources; causes and effects; cultural eutrophication; groundwater pollution; maintaining water quality; water purification; sewage treatment/septic systems; Clean Water Act and other relevant laws</p>	VI. Pollution: A.3	<ul style="list-style-type: none"> ❖ Ch. 19 Study Guide ❖ Water pollution tests- field 	February 6 blocks	Ch. 19: pgs 483-511
Unit 7: Toxicology, Pesticides, and Waste					

ORGANIZED TOPICS	ESSENTIAL KNOWLEDGE AND SKILLS	S.O.L.	ACTIVITIES	TIME FRAME (month and # of blocks)	RESOURCES
Ch. 11: Risk, Toxicology, and Human Health	<p>Impacts on the Environment and Human Health - Hazards to human health: Environmental risk analysis; acute and chronic effects; dose-response relationships; air pollutants; smoking and other risks</p> <p>Hazardous chemicals in the environment: Types of hazardous wastes; treatment/disposal of hazardous waste; cleanup of contaminated sites; biomagnification; relevant laws</p> <p>Economic Impacts: Cost-benefit analysis; externalities; marginal costs; sustainability</p>	VI. Pollution: B.1, 2; C	<ul style="list-style-type: none"> ❖ Ch. 11 Study Guide ❖ Risk Assessment Activity ❖ Risk vs. Perception lab ❖ Brine Shrimp Herbal Tea Assay Lab 	February/March 6 blocks	Ch. 11: pgs 228-252
Ch. 20: Pesticides and Pest Control	Controlling pests: Types of pesticides; costs and benefits of pesticide use; integrated pest management; relevant laws	IV. Land and Water Use: A.2	<ul style="list-style-type: none"> ❖ Ch. 20 Study Guide ❖ Measuring Pollutants Activity-field ❖ Pesticides Worksheet ❖ LD50 Worksheet ❖ Affects of Pesticides on Plants-indoor 	March 6 blocks	Ch. 20: pgs 512-524
Ch. 21: Solid and Hazardous Waste	Solid Waste: Types; disposal; reduction	VI. Pollution: A.4	<ul style="list-style-type: none"> ❖ Ch. 21 Study Guide ❖ Solid Waste Inventory ❖ Toxic Sites in your Neighborhood ❖ Superfund Sites Lab 	March 6 blocks	Ch. 21: pgs 525-558
Unit 8: Sustainability					
Ch. 22 Sustaining Wild	Loss of Biodiversity: Habitat loss;	VII. Global Change: C	<ul style="list-style-type: none"> ❖ Endangered Species Project ❖ Wildlife Habitat Planning Lab 	March 3 blocks	Ch. 22: pgs 560-593

ORGANIZED TOPICS	ESSENTIAL KNOWLEDGE AND SKILLS	S.O.L.	ACTIVITIES	TIME FRAME (month and # of blocks)	RESOURCES
Species	<p>overuse; pollution; introduced species; endangered and extinct species; maintenance through conservation; relevant laws and treaties</p> <p>Forestry: Tree plantations; old growth forests; forest fires; forest management; national forests</p> <p>Rangelands: Overgrazing; deforestation; desertification; rangeland management; federal rangelands</p> <p>Public and federal lands: management; wilderness areas; national parks; wildlife refuges; forests; wetlands</p> <p>Land conservation options: preservation; remediation; mitigation; restoration</p> <p>Sustainable land-use strategies</p>	IV. Land and Water Use: B, C, D. 3, 4, 5			
Ch. 23: Sustaining Terrestrial Biodiversity	Loss of Biodiversity: Habitat loss; overuse; pollution; introduced species; endangered and extinct species; maintenance through conservation; relevant laws and treaties	VII. Global Change: C IV. Land and Water Use: D.3, 4, 5	<ul style="list-style-type: none"> ❖ Aquatic and Terrestrial Biodiversity Studies ❖ "Sand County Almanac: Land Ethic" Aldo Leopold- required reading 	March 3 blocks	Ch. 23: pgs 594-633

ORGANIZED TOPICS	ESSENTIAL KNOWLEDGE AND SKILLS	S.O.L.	ACTIVITIES	TIME FRAME (month and # of blocks)	RESOURCES
Ch. 24: Sustaining Aquatic Biodiversity	<p>Public and federal lands: management; wilderness areas; national parks; wildlife refuges; forests; wetlands</p> <p>Land conservation options: preservation; remediation; mitigation; restoration</p> <p>Sustainable land-use strategies</p> <p>Loss of Biodiversity: Habitat loss; overuse; pollution; introduced species; endangered and extinct species; maintenance through conservation; relevant laws and treaties</p> <p>Public and federal lands: management; wilderness areas; national parks; wildlife refuges; forests; wetlands</p> <p>Land conservation options: preservation; remediation; mitigation; restoration</p> <p>Fishing: Fishing techniques; over-fishing; aquaculture; relevant laws and treaties</p>	VII. Global Change: C IV. Land and Water Use: D. 3, 4; F	<ul style="list-style-type: none"> ❖ When a Whale is a Right ❖ Comprehensive study of fishing, land use laws ❖ "Sand County Almanac: Land Ethic" Aldo Leopold- required readings 	March/April 3 blocks	Ch. 24: pgs 634-660
Ch. 25: Sustainable	Urban land development: Planned development; suburban sprawl;	IV. Land and Water	❖ Compare and contrast different types of cities	April 3 blocks	Ch. 25: pgs 661-688

ORGANIZED TOPICS	ESSENTIAL KNOWLEDGE AND SKILLS	S.O.L.	ACTIVITIES	TIME FRAME (month and # of blocks)	RESOURCES
Cities: Urban Land Use and Management	<p>urbanization</p> <p>Transportation infrastructure; Federal highway system; canals and channels; roadless areas; ecosystem impacts</p> <p>Public and federal lands: management; wilderness areas; national parks; wildlife refuges; forests; wetlands</p> <p>Land conservation options: preservation; remediation; mitigation; restoration</p> <p>Sustainable land-use strategies</p>	Use: D.1, 2, 3, 4, 5	❖ Research Green Communities and houses.		
Ch. 26 Economics, Environment, and Sustainability	<p>Urban land development: Planned development; suburban sprawl; urbanization</p> <p>Transportation infrastructure; Federal highway system; canals and channels; roadless areas; ecosystem impacts</p> <p>Public and federal lands: management; wilderness areas; national parks; wildlife refuges; forests; wetlands</p>	IV. Land and Water Use: D.1, 2, 3, 4, 5; G	❖ Turn an everyday city into a sustainable, alternatively run area that would be considered “eco friendly”	April 3 blocks	Ch. 26: pgs 690-715

ORGANIZED TOPICS	ESSENTIAL KNOWLEDGE AND SKILLS	S.O.L.	ACTIVITIES	TIME FRAME (month and # of blocks)	RESOURCES
Ch. 27: Politics, Environment, and Sustainability	<p>Land conservation options: preservation; remediation; mitigation; restoration</p> <p>Sustainable land-use strategies</p> <p>Global economics: Globalization; World Bank; Tragedy of the Commons; relevant laws and treaties</p> <p>Urban land development: Planned development; suburban sprawl; urbanization</p> <p>Transportation infrastructure; Federal highway system; canals and channels; roadless areas; ecosystem impacts</p> <p>Public and federal lands: management; wilderness areas; national parks; wildlife refuges; forests; wetlands</p> <p>Land conservation options: preservation; remediation; mitigation; restoration</p> <p>Sustainable land-use strategies</p> <p>Global economics: Globalization;</p>	IV. Land and Water Use: D.1, 2, 3, 4, 5; G VII. Global Change: A, B, C	❖ The Legislation Project	April 4 blocks	Ch. 27: pgs 716 - 740

ORGANIZED TOPICS	ESSENTIAL KNOWLEDGE AND SKILLS	S.O.L.	ACTIVITIES	TIME FRAME (month and # of blocks)	RESOURCES
Ch. 28: Environmental Worldviews, Ethics, and Sustainability	<p>World Bank; Tragedy of the Commons; relevant laws and treaties</p> <p>Stratospheric Ozone: Formation of stratospheric ozone; ultraviolet radiation; causes of ozone depletion; effects of ozone depletion; strategies for reducing ozone depletion; relevant laws and treaties</p> <p>Global Warming: Greenhouse gases and the greenhouse effect; impacts and consequences of global warming; reducing climate change; relevant laws and treaties</p> <p>Loss of Biodiversity: Habitat loss; overuse; pollution; introduced species; endangered and extinct species; maintenance through conservation; relevant laws and treaties</p> <p>Urban land development: Planned development; suburban sprawl; urbanization</p> <p>Transportation infrastructure; Federal highway system; canals and channels; roadless areas; ecosystem impacts</p>	<p>IV. Land and Water Use: D.1, 2, 3, 4, 5</p> <p>VII. Global Change: A, B, C</p>	<ul style="list-style-type: none"> ❖ The Legislation Project ❖ Start AP exam review 	<p>May 4 blocks</p>	<p>Ch. 28: pgs 741-757</p>

ORGANIZED TOPICS	ESSENTIAL KNOWLEDGE AND SKILLS	S.O.L.	ACTIVITIES	TIME FRAME (month and # of blocks)	RESOURCES
	<p>Public and federal lands: management; wilderness areas; national parks; wildlife refuges; forests; wetlands</p> <p>Land conservation options: preservation; remediation; mitigation; restoration</p> <p>Sustainable land-use strategies</p> <p>Global economics: Globalization; World Bank; Tragedy of the Commons; relevant laws and treaties</p> <p>Stratospheric Ozone: Formation of stratospheric ozone; ultraviolet radiation; causes of ozone depletion; effects of ozone depletion; strategies for reducing ozone depletion; relevant laws and treaties</p> <p>Global Warming: Greenhouse gases and the greenhouse effect; impacts and consequences of global warming; reducing climate change; relevant laws and treaties</p> <p>Loss of Biodiversity: Habitat loss; overuse; pollution; introduced species; endangered and extinct</p>				

ORGANIZED TOPICS	ESSENTIAL KNOWLEDGE AND SKILLS	S.O.L.	ACTIVITIES	TIME FRAME (month and # of blocks)	RESOURCES
Review for AP Examination	species; maintenance through conservation; relevant laws and treaties			May 4 blocks	
<i>AP Environmental Science Exam</i>				<i>May 2009</i>	