

AP Environmental Science Syllabus

C Frey
Fall 2012

The AP Environmental Course is designed to be the equivalent of a one-semester, introductory college course in environmental science. The AP Environmental Course adheres to the objectives set forth in the *Course Description for AP Environmental Science* (on the Advanced Placement website) which are 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 preventing them.

Textbook

G. Tyler Miller Jr. and Scott E. Spoolman *Living in the Environment 17th Edition* (Belmont, Calif.: Brooks/Cole, 2009,2012)

Course Outline

This outline is tentative and subject to change. Please refer to teacher webpage for updates.

Week 1

Chapter 1: Environmental Problems, Their Causes, and Sustainability

- Activity: Cats of Borneo
- Video: Escape from Affluenza

Week 2

Environmental History

- Case study: The tragedy of the Commons [C7]
- Video: PBS' Endangered Planet
- Test: Chapter 1

Week 3

Chapter 2: Science, Systems, Matter, and Energy

- Lab: *Ecological Impacts of Rice Farming: Nutrient Cycles (Miller)* [C7], [C8], [C9], [C11]
- Activity: Biological Footprint [C8], [C10], [C11]

Week 4

Chapter 3: Ecosystems: What are They and How Do They Work

- Lab: *Net Primary Productivity* [C11], [C9], [C8], [C1]
- Test: Chapter 2,3

Chapter 4: Evolution and Biodiversity

- Lab: *Evolution and Adaptation: Using Woolly Worms and Other Creatures to Simulate Natural Selection (Miller Lab #9)* [C11], [C9], [C8], [C3]

Week 5

Chapter 7: Climate and Terrestrial Biodiversity [C8]

- Lab: Formation of Deserts (Molnar # 4) [C11]
- Test: Chapter 4 and 7

Chapter 8: Aquatic Biodiversity

- Lab: Water testing, species count and identification [C11], [C2], [C4], [C7]
- Film: *Water's Journey: The Hidden Rivers of Florida*, Karts Productions

Week 6

Chapter 11: Sustaining Aquatic Biodiversity

- Case Study: Restoring the Florida Everglades
- Case Study: Can the Great Lakes survive Repeated Invasions by alien Species?
- Films: Strange Days on Planet Earth: Part 5– National Geographic
- Test: Chapters 8 and 11

Chapter 13: Water Resources

- Case Study: The Colorado River Basin – An Over-tapped Resource
- Case Study: China's Three Gorges Dam – A Controversial Project
- Activity: Water Loss Drop by Drop, Investigation #13, Molner [C1], [11]

Week 7

Chapter 20: Water Pollution [C6]

- Test: Chapter 13 and 20

Week 7 and 8

Chapter 5: Biodiversity, Species Interactions, and Population Control [C3]

- Lab: Predator- Prey Simulation
- Video: Strange Days on Planet Earth: Part 3 – National Geographic

Chapter 6: The Human Population and Its Impact [C3]

- Lab: World Population Growth (Molnar #19) [C11], [C3], [C9]
- Lab: Global Population Trends (Molnar # 21) [C11], [C3], [C9]
- Video: World In Balance, Nova
- Test: Chapter 5,6

Week 9

Chapter 9: Sustaining Biodiversity: The Species Approach

- Video: Strange Days on Planet Earth: Part 1 – National Geographic
- Ch. 24 and 25: Environmental Laws; Global Environmental Policy, Environmental Groups. Environmental ethics

Chapter 10: Sustaining Terrestrial Biodiversity: The Ecosystem Approach [C2], [C8], [C9]

- Case study: How should U.S. National Forests be managed? [C1], [C9]

Midterm Exam. The test will be structured to simulate the AP Exam, but with only three essay questions due to time constraints.

Week 10

Chapter 12: Food, Soil and Pest Management [C10]

- Case Study: How Successful have Pesticides been in Reducing Crop Losses in the United States. [C7]
- Case Study: Revisiting DDT – from Riches to Rags [C7], [C10]
- Selected Chapter Review Questions
- Lab: Soil Analysis, Investigation # 9, Molnar [C4], [8], [C9], [C11]
- Test

Week 11

Chapter 14: Geology and Nonrenewable Mineral Resources [C1], [C5]

- Lab: *Cookie Mining Lab* [C11]
- test

Week 12

Chapter 15: Nonrenewable Energy Resources [C1], [C5]

- Case Study: The Yucca Mountain Storage Site for High-Level Radioactive Wastes.
- Film: Energy-Coal & Nuclear: Problem or Solution?, PBS
- Test

Week 13

Chapter 16: Energy Efficiency and Renewable Energy [C1], [C5]

- Case Study: The Coming Energy-Efficiency and Renewable –Energy Revolution
- Film: Energy: Harvesting the Wind, PBS
- Test: Chapters 14-16

Week 14

Chapter 18: Air Pollution [C6], [C10]

- Activity: Air Pollution Analysis
- Case Study: South Asia's Massive Brown Cloud –Chocking in China and India

Week 15

Chapter 19: Climate Change and Ozone Loss [C1]

- Case Study: Warning Signals from the Earth's Ice and Snow: Meltdowns are Underway
- Video: Strange Days on Planet Earth: Part 2 – National Geographic
- Film: *Ice Island*, Karst Productions (Will be shown after the AP Exam)
- Test: Chapters 18 and 19

Week 16

Chapter 17: Environmental Hazards and Human Health [C10]

- Lab: Toxicity Testing of Brine Shrimp [C11]

Week 17

Chapter 21: Solid and Hazardous Waste [C10]

- Case Study: A Black Day in Bhopal, India
- Case Study: Lead, Mercury, and Dioxins [C10]
- Test: Chapters 17 and 21

Week 18

Chapter 22, 23, 24, and 25 if there is time.