

APES Study Guide

Unit 1: Introduction to Environmental Science

The first unit of APES will acquaint you with environmental science. It introduces theory, philosophy, rhetoric and terminology, which will be used throughout the course.

Textbook Reference:

Botkin, Keller, *Environmental Science*, 7th edition: Chapters 1, 2 & 27

Outside Reading:

Gonick, and Outwater, *The Cartoon Guide to the Environment* Chapter 1 (In Class)

Brown, *Plan B 2.0* Chapter 1 (Read Over Summer)

Hardin, "The Tragedy of the Commons," *Science*, v163. December 13, 1968. (In Class)



Other Sources:

TBA

Do vocab over summer

Vocabulary - Must be *HANDWRITTEN* in your own words to receive credit.

aesthetic justification	ecological justification	moral justification
accuracy	ecology experiment	nonrenewable resource
anthropogenic	externality	part per billion (ppb)
carrying capacity	fishery free market economy	part per million (ppm)
commons	giga-	per capita
controlled experiment	gross domestic product (GDP)	precision
control	gross national product (GNP)	pseudoscience
cost-benefit analysis	hypothesis	renewable resource
DDT	independent variable	risk-benefit analysis
dependent variable	indirect costs	scientific method
developed (more developed) nations	inference	scientific model
developing (less developed) nations	kilo-	scientific theory
direct costs	marginal costs	sustainability
Easter Island	micro-	tragedy of the commons
environmental science	milli-	utilitarian justification
ecological footprint	mega-	

Study Guide Questions (SGOs): Over Summer: Outline Chapters 1 and 2. Then do the questions marked 'summer' below

1. Calculate your ecological footprint (<http://www.myfootprint.org/en/>), print a copy of your report and attach it to this assignment. Identify and describe two areas of your personal resource utilization that surprised you the most and two that were not surprising. List three ways in which you could substantially decrease your ecological footprint, and for each, explain why you will or will not make the change in lifestyle that would be required to decrease your ecological footprint. **Summer**
2. In *Plan B 2.0*, Lester Brown states that gasoline might cost \$11 per gallon if its price reflected "the full costs to society" of gasoline. List and describe the actions and activities that contribute to those costs. **Summer**
3. Other than any of those discussed in class, describe a "Tragedy of the Commons" that you have observed or of which you are aware. Identify the commons and the events that have led to the "tragedy" as well as possible solutions to the "tragedy."
4. Define environmental science. Distinguish between environmental science and ecology. **Summer**
5. Explain how the meanings of the terms, "theory", "fact", and "law" differ in science and in everyday usage. How do these different meanings lead to confusion? **Summer**
6. Design a controlled experiment, which could be performed to determine whether a certain air pollutant stunts the growth of a plant species. Identify all variables, include data collection/analysis etc.
7. Define sustainability as it applies to the use of resources. Provide three examples, from your own experience, in which you identify and describe the barriers to attaining sustainability with regards to the use of a resource.
8. Of all of the environmental issues that face the world today (air pollution, water pollution, water supply, human population, deforestation, loss of genetic diversity, global climate change, etc.), which do you think most threatens the continued survival and well-being of human beings? The Earth? Why?
9. Identify and describe a relatively undisturbed natural area that you have visited. For that area, write utilitarian, ecological, aesthetic, and moral arguments for preserving it.
10. With economic development comes urbanization. Discuss the implication that this trend has on the environment. Explain the role of economics in determining public policies. Use examples to illustrate your explanation.