

Biology 1409 • Man and the Environment

Instructor Information

Sandy Henry
Abilene High School • Room 1127
Office Hours: Monday thru Friday 9:00 – 9:55 AM

Course Description

The content of Biology 1401 includes generalizations and specifics of environmental biology. Students will consider, analyze, and discuss current advances in environmental issues from sociological, political, and scientific perspectives. You are expected to understand and remember the facts presented and to demonstrate the ability to work with those facts. This information will be presented during lecture, in the laboratory and through reading your textbook and other assigned material.

Student Learning Objectives:

The objective of the study of the natural sciences is to enable the student to understand, construct and evaluate relationships in the natural sciences, and to enable the student to understand the bases for building and testing theories. This course should help you:

- Interpret, analyze and synthesize data to determine causal relationships
- Evaluate the reliability of multiple sources of information, and recognize the differences among competing scientific theories.
- Make predictions and DEFEND CONCLUSIONS based on scientific argumentation
- Use scientific reasoning to justify abstract explanations
- Practical laboratory experience and statistical analysis.
- To understand and apply method and appropriate technology to the study of natural sciences.
- To demonstrate knowledge of the major issues and problems facing modern science, including issues that touch upon ethics, values and public policy.

Course Textbook: Environmental Science for AP by Friedland and Relyea

Course Topics and Brief Description:

- The Living World
The earth is one interconnected system. Our global society is totally dependent on earth's resources for our survival, yet we have also altered the planet in many ways. If our population, consumption, and wastes continues to grow exponentially, we will exceed the capacity of Earth's life-support systems.
In this unit, we will learn how environmental science can help us understand the complex relationships between humans and nature. To do this, we will need to examine the 'big picture' of sustainability, economic development, and the connections between social, economic and environmental issues in our world today.
- Biodiversity
In this unit, we will examine the tremendous biodiversity of Earth, how it develops over time through evolution, and how humans are impacting it. We will consider the dynamics that shape any particular species' population, and how communities of species interact over time to function. Conservation of these communities is key.
- Human Populations
The principle objective of this topic is to understand human population growth. This chapter includes the social, economic and environmental factors that determine growth. The amount of resource consumption of a growing human population is also addressed.
- Waste & Human Health
As human societies have grown in size and affluence, they have begun to generate waste which cannot be easily broken down or used by natural processes. There are many ways to reduce and to deal with this waste, but each come with environmental and economic tradeoffs. Increasing population densities and technological development have also lead to new threats to human health. In this unit, we will examine the major impacts of waste and development on human health, and how we can manage the risks they pose.

- Land Use

All human activities require land, and our societies have spread to every corner of the globe. In this unit, we will investigate the major demands humans place on the limited amount of land on Earth and what environmental impacts these demands cause. We will pay special attention to agriculture. As always, our focus will remain on evaluating the impact of human activities on environmental systems and finding sustainable solutions.

- Energy

Fossil fuels completely transformed human society and its impact on the environment, but they are limited in supply and come with large environmental effects. However, billions of people around the world desperately need more cheap energy to improve their standard of living. In this unit, we will investigate human use of fossil fuels and alternative energy sources.

- Air and Water Pollution

One result of humanity's dramatic increase in resource consumption in recent centuries is the generation of large amounts of pollution. The atmosphere and oceans are large commons in to which much of this pollution is discharged. In this unit, we will examine specific harmful pollutants – along with their sources and effects – as well as the technologies and legislative responses that have addressed pollution problems with varying degrees of success.

- Climate Change

Throughout this course we have explored the natural world and humanity's impact on it, particularly in the last 300 years when the bulk of population growth and economic development has occurred. In this unit, we will delve in detail examining one of the most serious threats to the sustainability of the human species: climate change. This problem has accelerated in recent decades, but fortunately we have many opportunities to address these problems before they get worse. We will focus on specific evidence, specific impacts and specific solutions.

Grading policy

- 50% Assessments: Tests, Extended Labs, Projects, Presentations
- 50% Classwork: Classwork, Homework, Daily Lab, Quizzes

Those who have the privilege to know,
have the duty to act.
~Albert Einstein.
