Part 1: Course Information

Course Overview

Basic Information

College:
Department:
Semester:
Instructor:
Office:
Office Hours:
Office Telephone:
Email:

Description

This course is intended as a first college-level science course. It is designed to equip students with the knowledge and skills to evaluate scientific problems in environmental science and related fields, and to gain appreciation for the structure and function of the environment as it relates to human activities. This course consists of 13 lessons along with corresponding quizzes, homework, and classroom activities.

Prerequisites

No prerequisites are required for this course, but completion of high school level English, Science requirement will be helpful to students taking this course. Student lacking these skill should expect to invest more time in this course to ensure their success.
Course Materials

There are no required textbooks for this course.

Course Structure

This course is designed to provide a hybrid experience, including both face-to-face and online activities. The lectures, classroom discussions, and other active learning exercises will be delivered face-to-face in a traditional classroom setting. Field visits, both group and individual, are possible. Online sessions will include content and activities from Platform Plus.

Technical Requirements

- Internet connection.
- Access to college learning management system and Platform+.
- Access to college email account.
- Microsoft PowerPoint.
- Microsoft Word.

Part 2: Learning Outcomes

Following successful completion of the Intro to Environmental Sciences course, the student will be able to:

Environmental Systems

- Demonstrate knowledge of the basic function of the major biogeochemical cycles in the environment
- Appreciate the complexity of environmental systems
- Understand how altering biogeochemical cycles through pollution or other methods can alter their function

Scientific Process

- Understand the explanatory power of science and the role of uncertainty in science
- Recognize common features of pseudoscience

Reviewing Scientific Research

- Distinguish reliable and unreliable sources
- Synthesize a conclusion based on information from multiple sources
- Correctly cite sources in written work

Effective Communication
Introduction to Environmental Science Syllabus

- Hold a logical discussions on issues in environmental science
- Write fluently in brief, accurate technical style.

Human Interaction with Environmental Systems
- Identify major local and global environmental issues
- Propose solutions to environmental problems
- Weigh the needs of various stakeholders when considering environmental issues

Part 3: Course Calendar
This course calendar provides a schedule of lessons and an outline of topics covered. Activities, assignments, and assessments will be explained in detail throughout the course. Please contact the instructor with questions.

Lesson 1: Introduction to Environmental Science and Scientific Method
1. Course Introduction and Syllabus Review
2. Lecture
   a. Sustainability
   b. Environmental Ethics
   c. Environmental Science as Interdisciplinary
   d. Scientific Method
3. Activity: Sustainability Worksheet
4. Homework: Pseudoscience

Lesson 2: Matter, Energy and Life
1. Quiz: Lesson 1 material
2. Lecture: Matter, Energy and Life
   a. How Energy and Materials Move through Ecosystems
   b. How organisms interact with their environments.
   c. The Influence of the First and Second Laws of Thermodynamics on Ecosystem
3. Activity: Food Web
4. Homework: Citations

Lesson 3: Population Dynamics
1. Lecture
a. Population Ecology
2. Limiting Factors
3. Implications for Human Society
4. Activities:
   a. Quiz
5. Population Modeling Activity
6. Population Modeling Paper

Lesson 4: Evolution and Biodiversity

1. Lecture
   a. Basic Concepts of Evolution and Speciation
2. How Diversity Develops
3. Why Biodiversity is Important to Preserve
4. Activities
   a. Quiz
5. Evolution by Natural Selection Activity

Lesson 5: Human Population and Impact

1. Lecture
   a. Population Size, Affluence and Technology
2. Exponential Population Growth
3. Age Distribution
4. Ecological Footprints
5. Activities
   a. Quiz
6. Ecological Footprint Activity

Lesson 6: Land Use, Forest and Rangelands

1. Lecture
   a. Major Biomes of the World
   b. Degradation of Land Resources
2. Methods of Conservation
3. Activities
   a. Quiz
4. Geo-guess Activity
5. Agriculture Paper

Lesson 7: Water Resources and Use
1. Lecture
   a. Major Aquatic Biomes
   b. The Water Cycle
2. Basic Groundwater Terminology and Issues
3. Activities
   a. Quiz
4. Aquifer Activity
5. Groundwater Resource Paper

Lesson 8: Soil and Agricultural Resources
1. Lecture
   a. Changes Needed in Agricultural Systems for:
      i. Feeding a Growing Population
      ii. Minimizing Environmental Degradation and Health Risks
2. Activities
   a. Quiz
3. Discussion of Agricultural Issues

Lesson 9: Natural Resources Extraction
1. Lecture
   a. Kinds of Materials Extracted from Earth’s Crust
   b. Extraction Methods
   c. Potential Environmental Consequences
2. Activities
   a. Quiz
3. Hydraulic Fracturing Paper
Introduction to Environmental Science

**Lesson 10: Fossil, Nuclear and Renewable Energy**

1. Lecture
   a. Major Types of Non-Renewable and Renewable Energy Sources
   b. Advantages and Disadvantages of Each
2. Activities
   a. Quiz
3. Energyville Presentations

**Lesson 11: Climate Change**

1. Lecture
   a. Mechanisms Causing Climate Change and Ozone Depletion
   b. Effects on the Environment and People
   c. Possible Solutions
2. Activities
   a. Quiz
3. Global Climate Change Activities

**Lesson 12: Air and Water Pollution**

1. Lecture
   a. Major Sources of Pollution in the United States
   b. Harm Caused
2. Regulations
3. Activities
   a. Quiz
4. Air and Water Pollution Discussion

**Lesson 13: Solid and Hazardous Waste**

1. Lecture
   a. Basic Rules for Handling Hazardous and Non-Hazardous Materials
   b. Problems in Waste Disposal Systems
2. Activities
   a. Quiz
3. Waste Discussion
4. Zero Waste Paper

Part 4: Grading Information

Graded Activities

Class Activities (17)

Students are required to come to class prepared and ready to participate. Each class will have one or two activities that will be graded pass/fail. All students who actively participate in the activities will receive full credit. If you miss an activity, leave early, or fail to participate, you will receive an F for the activity.

Quizzes (13)

Quizzes will be in short answer format and will review recently covered material.

Major Paper (1)

A single major paper will be completed in this course. This paper will be based on an experiment conducted in class so it is essential that you attend Lesson 3 in order to fully understand the experiment. Furthermore several work periods will be held during class time.

Minor Papers and Homework (6)

Six 1-2 page papers will be completed over the course of the semester.

Grading Breakdown

Class Activities (300 points) = 30%
Quizzes (200 points) = 20%
Major Paper (200 points) = 20%
Minor Papers and Homework (300 points) = 30%
Total (1,000 points) = 100%

Grading Scale

A = 900 to 1000 pts
B = 800 to 899 pts
C = 700 to 799 pts
Introduction to Environmental Science Syllabus

D = 600 to 699 pts
F = 0 to 599 pts

Late Work

Late work will not be accepted unless it is pre-approved by the instructor. All graded work will be posted in the college learning management system with 48 hours of due date.

Part 5: College Policies and Resources

Policies

Attendance

Academic Integrity

Campus Civility

Resources

Counseling

Veterans

Students with Disabilities

About These Materials

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