Advanced Placement® (AP®) Environmental Science (APENVIR) B Syllabus

Course Name

APENVIR B

Advanced Placement® (AP®) Environmental Science – Semester B

Course Information

APENVIR B is the second semester of this two-semester course.

AP Environmental Science provides students with the scientific principles, concepts, and methodologies required to understand the interrelationships of the natural world. The course draws upon various disciplines, including geology, biology, environmental studies, environmental science, chemistry, and geography in order to explore a variety of environmental topics. Topics explored include natural systems on Earth; biogeochemical cycles; the nature of matter and energy; the flow of matter and energy through living systems; populations; communities; ecosystems; ecological pyramids; renewable and nonrenewable resources; land use; biodiversity; pollution; conservation; sustainability; and human impacts on the environment. The equivalent of an introductory college-level science course, AP Environmental Science prepares students for the AP exam and for further study in science, health sciences, or engineering.

The AP Environmental Science course provides a learning experience focused on allowing students to develop their critical thinking skills and cognitive strategies. Scientific inquiry skills are embedded in the direct instruction; wherein students learn to ask scientific questions, deconstruct claims, form and test hypotheses, and use logic and evidence to draw conclusions about the concepts. Frequent no- and low-stakes assessments allow students to measure their comprehension and improve their performance as they progress through each activity.

Students perform hands-on labs and projects that give them insight into the nature of science and help them understand environmental concepts, as well as how evidence can be obtained to support those concepts. Virtual lab activities enable students to engage in investigations that would otherwise require long periods of observation at remote locations and to explore simulations that enable environmental scientists to test

predictions. During both hands-on and virtual labs, students form hypotheses; collect, analyze, and manipulate data; and report their findings and conclusions. Throughout this course, students are given an opportunity to understand how biology, earth science, and physical science are applied to the study of the environment and how technology and engineering are contributing solutions for studying and creating a sustainable biosphere.

Summative tests are offered at the end of each unit as well as at the end of each semester, and contain objective and constructed response items. Robust scaffolding, rigorous instruction, relevant material, and regular active learning opportunities ensure that students can achieve mastery of the skills necessary to excel on the AP exam.

Prerequisite: Two years of high school lab sciences (one year of life science and one year of physical science), and one year of Algebra

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Course Delivery Method

Online

Contacting Your Instructor

You may contact your instructor through the Blackboard messaging system. Technical support is available 24/7 at www.k12.ttu.edu.

Course Objectives

After completing this course, you should be able to:

1. understand the interrelationships of the natural world;
2. recognize and discuss natural systems on Earth; biogeochemical cycles; the nature of matter and energy; the flow of matter and energy through living systems; populations; communities; ecosystems; ecological pyramids; renewable and nonrenewable resources; land use; biodiversity; pollution; conservation; sustainability; and human impacts on the environment;
3. form hypotheses; collect, analyze, and manipulate data; and report your findings and conclusions; and
4. understand how biology, earth science, and physical science are applied to the study of the environment and how technology and engineering are contributing solutions for studying and creating a sustainable biosphere.

APENVIR addresses the required Texas Essential Knowledge and Skills (TEKS). These can be found at the Texas Education Agency website.

Textbook and Materials

Textbook(s)

There is no required text to purchase for this course.

Materials

- balance
- beakers, 100 mL, 2
- calculator
- computer with Internet access
- cups, small plastic, 15-20
- electric utility bill
- foods found at home or in a grocery store, 10
- gloves, sturdy (gardening or work gloves)
- gloves: plastic, chemical-resistant, 3 pairs
- goggles, safety
- graduated cylinder, 250 mL
- household trash
- jar, glass, wide-mouth (e.g., Mason or Ball jar) that can be closed tightly and does not leak
- KOH, 1 g; or NaOH, 0.7 g
- lab apron or long-sleeved shirt
- map of North and Central America
- marker, permanent
- materials needed for self-designed experiment (will vary but could include a thermometer, fridge, freezer, microwave, and more)
- measuring cups and spoons, including teaspoon
- methanol, 30 mL
- methylene blue in a dropper bottle (can be purchased online if not available through your school)
- milk (apple juice or a sugar water mix can be used)
- paper
- pencil
- pH strips from a pool-supply or aquarium store
- plastic trash bags, large
- pollutants (could be oil, vinegar, detergent, window cleaner, etc.)
- potting soil
- radish seeds (or other fast-sprouting seeds)
- salt
- scissors
- separatory funnel and ring stand

- stirrer
- tape, plastic or masking
- test tube marker or paper and tape
- test tube rack
- test tubes, 5
- tray or bin
- vegetable oil, 1 virgin, 50 mL
- watch with second hand
- water, distilled and tap
- yeast

Technical Requirements

- Internet access – preferably high speed (for accessing Blackboard)
- Email
- Word processing software such as Microsoft Word
- Adobe Reader (download from Adobe.com)
- Audio and video capabilities (for watching/listening to course content)

Technical Skill Requirements

Be comfortable with the following:

- using a word processor
- Internet search engines and browsers

Course Organization

This course consists of five units and a final exam. Each unit contains the following:

- Introduction and Instructions
- Learning Objectives and Curriculum Standards
- Learning Activities
- Assignments

Each unit includes several activities that present content knowledge. Each unit also includes multiple graded assignments to ensure that you learn the content that has been presented in the activities. Some of the assignments are automatically-graded quizzes, and some are written assignments or activities that your instructor will grade. Be sure you read all instructions carefully and ask your instructor for help if something is not clear.

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Course Outline

Please note that some assignments will be hidden from you when you start the course. As you move through the units and complete assignments, more will unlock for you.

Unit	Topic	Approximate Time for Completion
Unit 6	Land and Water Use	Four weeks
Lesson 1	Obtaining Earth's Resources	
Lesson 2	Recreation and Urban Development	
Lesson 3	Sustainable Practices	
Lesson 4	Wrap-Up	
Unit 7	Energy Consumption and Resources	Four weeks
Lesson 1	Energy Concepts and Traditional Sources	
Lesson 2	Energy and Sustainability	
Lesson 3	Wrap-Up	
Unit 8	Pollution and Waste Management	Four weeks
Lesson 1	Pollution and Waste Management	
Lesson 2	Impacts of Pollution	
Lesson 3	Wrap-Up	
Unit 9	Global Challenges	Four weeks
Lesson 1	The Global Community	
Lesson 2	Global Climate Change	
Lesson 3	Global Environmental Policies	
Lesson 4	Wrap-Up	
Unit 10	Semester Review and Practice AP Exam	One week
Lesson 1	Semester Review	
Final Exam	Units 6-10	

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Assignment Schedule

Each of the following must be completed to complete the course. Items with an asterisk (*) indicate that these are summative assessments for the course.

Unit	Weeks	Assignments
6	1-4	6.1.1 Project: Part I — Explore Your Local Environmental Challenges 6.1.3 Quiz: Land and Water Resources 6.1.5 Quiz: Biological Resources 6.1.7 Quiz: Mineral and Energy Resources 6.1.8 Practice: Earth's Natural Resources 6.1.9 Lab: Investigate How Pollutants Affect Plants 6.1.10 Discuss: Investigate How Pollutants Affect Plants 6.2.2 Quiz: Recreation, Conservation, and Urban Development 6.2.4 Quiz: Human Cultures and Societies 6.2.5 Practice: Land Use and Its Effects 6.2.7 Quiz: Recreation and Urban Development 6.2.8 Explore: Effects of Climate Change 6.3.2 Quiz: Sustainable Food Production 6.3.4 Quiz: Sustainable Resource Management 6.3.7 Quiz: Sustainable Practices 6.3.8 Lab: Investigate Food Security 6.3.9 Discuss: Investigate Food Security 6.4.1 Project: Part II — Explore Your Local Environmental Challenges *6.4.2 Test (CST): Land and Water Use
7	5-8	7.1.2 Quiz: Types of Energy 7.1.4 Quiz: Fossil Fuels 7.1.5 Practice: Energy Concepts and Traditional Sources 7.1.7 Quiz: Energy Concepts and Traditional Sources 7.1.8 Lab: Investigate Home Energy Usage 7.1.9 Discuss: Investigate Home Energy Audits 7.2.2 Quiz: Energy and Sustainability 7.2.4 Quiz: Alternative Energy Resources 7.2.5 Practice: Resource Availability 7.2.6 Explore: Fluid-Injection Wells and Induced Seismicity 7.2.8 Quiz: Energy and Sustainability 7.2.9 Lab: Investigate Sustainable Energy 7.2.10 Discuss: Investigate Sustainable Energy *7.3.1 Test (CST): Energy Consumption and Resources

Unit	Weeks	Assignments
8	9-12	8.1.2 Quiz: Water, Air, and Land Pollution 8.1.4 Quiz: Waste Management 8.1.5 Practice: Pollution and Waste Management 8.1.7 Quiz: Pollution and Waste Management 8.1.8 Lab: Investigate Recycling Practices 8.1.9 Discuss: Investigate Recycling Practices 8.2.2 Quiz: The Tragedy of the Commons 8.2.4 Quiz: Managing the Commons 8.2.6 Quiz: Protecting Water, Air, and Land 8.2.8 Explore: Carbon Dioxide Sequestration 8.2.9 Lab: Investigate Air Quality 8.2.10 Discuss: Investigate Air Quality *8.3.1 Test (CST): Pollution and Waste Management
9	13-16	9.1.1 Project: Part I — Explore Sustainability for Your Local Environment 9.1.3 Quiz: Sustainable Societal Development 9.1.5 Quiz: The Global Economy 9.1.6 Practice: The Global Community 9.1.8 Quiz: The Global Community 9.1.9 Lab: Investigate Human Carrying Capacity 9.1.10 Discuss: Investigate Human Carrying Capacity 9.2.2 Quiz: Climate Change 9.2.4 Quiz: Effects of Climate Change 9.2.7 Quiz: Global Climate Change 9.2.8 Lab: Investigate Dissolved Oxygen Levels 9.2.9 Discuss: Investigate Dissolved Oxygen Levels 9.3.2 Quiz: Protecting Environmental Quality 9.3.4 Quiz: Protecting Wildlife and Biodiversity 9.3.5 Practice: Global Environmental Policies 9.3.7 Quiz: Global Environmental Policies 9.3.8 Explore: Biodiversity Hot Spots 9.4.1 Project: Part II — Explore Sustainability for Your Local Environment *9.4.2 Test (CST): Global Challenges
10	17	**10.1.1 Final Exam: Semester 2 Computer-Scored Exam**

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Course Detailed Description

UNIT 6: LAND AND WATER USE

LESSON 1 OVERVIEW: OBTAINING EARTH'S RESOURCES

6.1.1 Project: Part I — Explore Your Local Environmental Challenges
Research and describe environmental challenges that affect the geographical area in which you live.
Duration: 1 hr 30 mins; Scoring: 10 points

6.1.2 Study: Land and Water Resources
Identify natural resources obtained from Earth's land and water and used to support the lifestyles of humans. Recognize the interdependence of natural resources. Evaluate the economic significance of natural resources.
Duration: 1 hr

6.1.3 Quiz: Land and Water Resources
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

6.1.4 Study: Agriculture, Forestry, and Fishing
Identify types and sources of biological resources used to produce food and goods that support human lifestyles. Evaluate the economic significance of natural resources. Recognize the interdependence of natural resources.
Duration: 1 hr

6.1.5 Quiz: Biological Resources
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

6.1.6 Study: Mineral Resources and Mining
Identify types and sources of mineral resources used to produce goods and energy that support human lifestyles. Learn about types of mining and the environmental effects of mining. Recognize the interdependence of natural resources.
Duration: 1 hr

6.1.7 Quiz: Mineral and Energy Resources
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

6.1.8 Practice: Earth's Natural Resources
Identify the types of Earth's land and water used to support the lifestyles of humans. Identify types and sources of mineral resources used to produce goods and energy that support human lifestyles. Recognize the interdependence of natural resources. Identify types and sources of biological resources used to produce food and goods that support human lifestyles.
Duration: 30 mins; Scoring: 10 points

6.1.9 Lab: Investigate How Pollutants Affect Plants
Conduct a scientific investigation, using a scientific process and demonstrating the proper and safe use of laboratory equipment. Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error.
Duration: 1 hr 30 mins; Scoring: 40 points
Wet lab

6.1.10 Discuss: Investigate How Pollutants Affect Plants
Discuss the results of the investigation.

Duration: 20 mins; Scoring: 10 points

LESSON 2 OVERVIEW: RECREATION AND URBAN DEVELOPMENT

6.2.1 Study: Recreation, Conservation, and Urban Development
Summarize the effects on natural ecosystems of human activities such as recreation, urbanization, conservation, preservation, restoration, and resource gathering and management.
Duration: 1 hr

6.2.2 Quiz: Recreation, Conservation, and Urban Development
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

6.2.3 Study: Human Cultures and Societies
Summarize the nature and purpose of human cultures and societies. Identify examples of different types of human cultures and societies.
Duration: 1 hr

6.2.4 Quiz: Human Cultures and Societies
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

6.2.5 Practice: Land Use and Its Effects
Evaluate the economic significance of natural resources. Summarize the effects and cost-benefit trade-offs of practices used in commercial agriculture, forestry, and fishing. Evaluate the hazards and risks involved in obtaining natural resources. Evaluate the hazards and risks to human health and well-being involved in obtaining and managing natural resources. Summarize the advantages and disadvantages of using different energy resources. Summarize the effects on natural ecosystems of human activities such as recreation, urbanization, conservation, preservation, restoration, and resource gathering and management. Discuss the validity and impact of scientific research on environmental issues related to human activities.
Duration: 30 mins; Scoring: 10 points

6.2.6 Read: Recreation and Urban Development
Read about recreation and urban development.
Duration: 1 hr 30 mins

6.2.7 Quiz: Recreation and Urban Development
Take a quiz to assess your understanding of the material.
Duration: 45 mins; Scoring: 20 points

6.2.8 Explore: Effects of Climate Change
Explore scientists' predictions about the effects of global climate change on the biosphere.
Duration: 1 hr 30 mins; Scoring: 30 points

LESSON 3 OVERVIEW: SUSTAINABLE PRACTICES

6.3.1 Study: Sustainable Food Production
Explain the goal of using sustainable practices in food production, resource management, and human societal development. Describe sustainable methods of food production, resource management, and human societal development. Compare traditional practices used in food production, resource management, and human societal development with sustainable practices. Identify advantages and disadvantages of using "green" and sustainable practices in food production, resource management, and human societal development.
Duration: 1 hr

6.3.2 Quiz: Sustainable Food Production
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

6.3.3 Study: Sustainable Resource Management
Explain the goal of using sustainable practices in food production, resource management, and human societal development. Describe sustainable methods of food production, resource management, and human societal development. Compare traditional practices used in food production, resource management, and human societal development with sustainable practices. Identify advantages and disadvantages of using “green” and sustainable practices in food production, resource management, and human societal development.
Duration: 1 hr

6.3.4 Quiz: Sustainable Resource Management
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

6.3.5 Checkup: Sustainable Practices
Explain the goal of using sustainable practices in food production, resource management, and human societal development. Describe sustainable methods of food production, resource management, and human societal development. Compare traditional practices used in food production, resource management, and human societal development with sustainable practices. Identify advantages and disadvantages of using “green” and sustainable practices in food production, resource management, and human societal development. Summarize the process of carbon dioxide sequestration and technologies that achieve it. Discuss the validity and impact of scientific research on environmental issues related to human activities.
Duration: 30 mins

6.3.6 Read: Sustainable Practices
Read about sustainable practices.
Duration: 1 hr 30 mins

6.3.7 Quiz: Sustainable Practices
Take a quiz to assess your understanding of the material.
Duration: 45 mins; Scoring: 20 points

6.3.8 Lab: Investigate Food Security
Conduct a scientific investigation, using a scientific process and demonstrating the proper and safe use of laboratory equipment. Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error.
Duration: 1 hr 30 mins; Scoring: 40 points
Wet lab

6.3.9 Discuss: Investigate Food Security
Discuss the results of the investigation.
Duration: 20 mins; Scoring: 10 points

LESSON 4 OVERVIEW: LAND AND WATER USE WRAP-UP

6.4.1 Project: Part II — Explore Your Local Environmental Challenges
Research and describe environmental challenges that affect the geographical area in which you live.
Duration: 1 hr 30 mins; Scoring: 40 points

6.4.2 Test (CST): Land and Water Use
Take a computer-scored test to assess what you have learned in this unit.
Duration: 30 mins; Scoring: 50 points

UNIT 7: ENERGY CONSUMPTION AND RESOURCES

LESSON 1 OVERVIEW: ENERGY CONCEPTS AND TRADITIONAL SOURCES

7.1.1 Study: Types of Energy
Learn about different types of energy and examples of each type.
Duration: 1 hr

7.1.2 Quiz: Types of Energy
Take a quiz to assess your understanding of the material.
Duration: 20 mins; Scoring: 20 points

7.1.3 Study: Fossil Fuels
Identify types and sources of mineral resources used to produce goods and energy that support human lifestyles. Recognize the interdependence of natural resources.
Duration: 1 hr

7.1.4 Quiz: Fossil Fuels
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

7.1.5 Practice: Energy Concepts and Traditional Sources
Identify the types of Earth's land and water used to support the lifestyles of humans. Identify types and sources of mineral resources used to produce goods and energy that support human lifestyles. Recognize the interdependence of natural resources. Identify types and sources of biological resources used to produce food and goods that support human lifestyles.
Duration: 30 mins; Scoring: 10 points

7.1.6 Read: Energy Concepts and Traditional Sources
Read about energy concepts and traditional sources.
Duration: 1 hr 30 mins

7.1.7 Quiz: Energy Concepts and Traditional Sources
Take a quiz to assess your understanding of the material.
Duration: 45 mins; Scoring: 20 points

7.1.8 Lab: Investigate Home Energy Usage
Conduct a home energy audit.
Duration: 1 hr 30 mins; Scoring: 40 points
Wet lab

7.1.9 Discuss: Investigate Home Energy Audits
Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error. Evaluate lab procedures and results in a discussion with your peers.
Duration: 20 mins; Scoring: 10 points

LESSON 2 OVERVIEW: ENERGY AND SUSTAINABILITY

7.2.1 Study: Energy and Sustainability
Learn about the advantages and disadvantages of different energy sources; learn how to apply scientific reasoning to analyze socially relevant energy issues.
Duration: 1 hr

7.2.2 Quiz: Energy and Sustainability
Take a quiz to assess your understanding of the material.
Duration: 20 mins; Scoring: 20 points

7.2.3 Study: Alternative Energy Resources
Describe how the use of natural resources will affect future generations of humans. Describe alternative forms of energy production.
Duration: 1 hr

7.2.4 Quiz: Alternative Energy Resources
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

7.2.5 Practice: Resource Availability
Identify renewable resources on which humans depend. Identify nonrenewable resources on which humans depend. Differentiate between renewable and nonrenewable resources. Evaluate the cost-benefit trade-offs of using renewable resources instead of nonrenewable resources. Describe how the use of natural resources will affect future generations of humans. Describe alternative forms of energy production.
Duration: 30 mins; Scoring: 10 points

7.2.6 Explore: Fluid-Injection Wells and Induced Seismicity
Explore and evaluate fluid-injection wells and induced seismicity.
Duration: 1 hr 30 mins; Scoring: 30 points

7.2.7 Read: Energy and Sustainability
Read about energy and sustainability.
Duration: 1 hr 30 mins

7.2.8 Quiz: Energy and Sustainability
Take a quiz to assess your understanding of the material.
Duration: 45 mins; Scoring: 20 points

7.2.9 Lab: Investigate Sustainable Energy
Determine sustainable combinations of practices for generating and using energy.
Duration: 1 hr 30 mins; Scoring: 40 points
Wet lab

7.2.10 Discuss: Investigate Sustainable Energy
Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error. Evaluate lab procedures and results in a discussion with your peers.
Duration: 20 mins; Scoring: 10 points

LESSON 3 OVERVIEW: ENERGY CONSUMPTION AND RESOURCES WRAP-UP

7.3.1 Test (CST): Energy Consumption and Resources
Take a computer-scored test to assess what you have learned in this unit.
Duration: 30 mins; Scoring: 50 points

UNIT 8: POLLUTION AND WASTE MANAGEMENT

LESSON 1 OVERVIEW: POLLUTION AND WASTE MANAGEMENT

8.1.1 Study: Water, Air, and Land Pollution
Identify point sources and nonpoint sources of air, land, and water pollution. Describe the effects of pollution on oceans, freshwater supplies, air, and land. Recognize the consequences of air, land, and water pollution on human health and societies. Evaluate the hazards pollutants pose to wildlife and other types of natural resources.
Duration: 1 hr

8.1.2 Quiz: Water, Air, and Land Pollution
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

8.1.3 Study: Waste Management
Describe methods of waste management, including burial in a landfill, dumping, incineration, composting, recycling, and reuse. Evaluate the impact of waste management and reduction strategies on resource availability.
Duration: 1 hr

8.1.4 Quiz: Waste Management
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

8.1.5 Practice: Pollution and Waste Management
Identify point sources and nonpoint sources of air, land, and water pollution. Describe the effects of pollution on oceans, freshwater supplies, air, and land. Recognize the consequences of air, land, and water pollution on human health and societies. Evaluate the hazards pollutants pose to wildlife and other types of natural resources. Describe methods of waste management, including burial in a landfill, dumping, incineration, composting, recycling, and reuse. Evaluate the impact of waste management and reduction strategies on resource availability.
Duration: 30 mins; Scoring: 10 points

8.1.6 Read: Pollution and Waste Management
Read about pollution and waste management.
Duration: 1 hr 30 mins

8.1.7 Quiz: Pollution and Waste Management
Take a quiz to assess your understanding of the material.
Duration: 45 mins; Scoring: 20 points

8.1.8 Lab: Investigate Recycling Practices
Compare the effectiveness of recycling techniques.
Duration: 1 hr 30 mins; Scoring: 40 points
Wet lab

8.1.9 Discuss: Investigate Recycling Practices
Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error. Evaluate lab procedures and results in a discussion with your peers.
Duration: 20 mins; Scoring: 10 points

LESSON 2 OVERVIEW: IMPACTS OF POLLUTION

8.2.1 Study: The Tragedy of the Commons
Recognize the definition and examples of a “common.” Describe how the overuse and degradation of natural resources affects the biosphere and human societies.
Duration: 1 hr

8.2.2 Quiz: The Tragedy of the Commons
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

8.2.3 Study: Managing the Commons
Describe how conservation and preservation of natural resources affect their availability and quality. Relate conservation and preservation of natural resources to the sustainability of ecosystems and human societies.

Duration: 1 hr

8.2.4 Quiz: Managing the Commons
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

8.2.5 Study: Protecting Water, Air, and Land
Summarize the history, provisions, and effects of the National Park Service Act. Summarize the history, provisions, and effects of the Clean Air Act. Summarize the history, provisions, and effects of the Clean Water Act. Summarize the history, provisions, and effects of the Soil and Water Resources Conservation Act.
Duration: 1 hr

8.2.6 Quiz: Protecting Water, Air, and Land
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

8.2.7 Checkup: The Concept of the Commons
Recognize the definition and examples of a “common.” Describe how the overuse and degradation of natural resources affects the biosphere and human societies. Describe how conservation and preservation of natural resources affect their availability and quality. Relate conservation and preservation of natural resources to the sustainability of ecosystems and human societies.
Duration: 30 mins

8.2.8 Explore: Carbon Dioxide Sequestration
Summarize the process of carbon dioxide sequestration and technologies that achieve it.
Duration: 1 hr 30 mins; Scoring: 30 points

8.2.9 Lab: Investigate Air Quality
Identify point source and nonpoint source causes of air pollution.
Duration: 1 hr 30 mins; Scoring: 40 points
Wet lab

8.2.10 Discuss: Investigate Air Quality
Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error. Evaluate lab procedures and results in a discussion with your peers.
Duration: 20 mins; Scoring: 10 points

LESSON 3 OVERVIEW: POLLUTION AND WASTE MANAGEMENT WRAP-UP

8.3.1 Test (CST): Pollution and Waste Management
Take a computer-scored test to assess what you have learned in this unit.
Duration: 30 mins; Scoring: 50 points

UNIT 9: GLOBAL CHALLENGES

LESSON 1 OVERVIEW: THE GLOBAL COMMUNITY

9.1.1 Project: Part I — Explore Sustainability for Your Local Environment
Identify your state and local legislation designed to protect the environment and natural resources. Evaluate the effects of national, state, and local environmental and resource protection laws on your local environment. Identify sustainable practices that have been adopted in your local environment. Recommend practices that might contribute to the sustainability of your local environment.
Duration: 1 hr 30 mins; Scoring: 10 points
Project

9.1.2 Study: Sustainable Societal Development
Explain the goal of using sustainable practices in food production, resource management, and human societal development. Describe sustainable methods of food production, resource management, and human societal development. Compare traditional practices used in food production, resource management, and human societal development with sustainable practices. Identify advantages and disadvantages of using “green” and sustainable practices in food production, resource management, and human societal development.
Duration: 1 hr

9.1.3 Quiz: Sustainable Societal Development
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

9.1.4 Study: The Global Economy
Recognize the interrelatedness of the global economy. Identify complex real-world problems faced by the global economy. Evaluate possible solutions to complex real-world problems in a global economy. Evaluate the need for cooperative human behaviors in mitigating and preventing complex real-world problems.
Duration: 1 hr

9.1.5 Quiz: The Global Economy
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

9.1.6 Practice: The Global Community
Summarize the nature and purpose of human cultures and societies. Identify examples of different types of human cultures and societies. Recognize the interrelatedness of the global economy. Identify complex real-world problems faced by the global economy. Evaluate possible solutions to complex real-world problems in a global economy. Evaluate the need for cooperative human behaviors in mitigating and preventing complex real-world problems.
Duration: 30 mins; Scoring: 10 points

9.1.7 Read: The Global Community
Read about the global community.
Duration: 1 hr 30 mins

9.1.8 Quiz: The Global Community
Take a quiz to assess your understanding of the material.
Duration: 45 mins; Scoring: 20 points

9.1.9 Lab: Investigate Human Carrying Capacity
Determine Earth’s carrying capacity for human populations.
Duration: 1 hr 30 mins; Scoring: 40 points
Wet lab

9.1.10 Discuss: Investigate Human Carrying Capacity
Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error. Evaluate lab procedures and results in a discussion with your peers.
Duration: 20 mins; Scoring: 10 points

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LESSON 2 OVERVIEW: GLOBAL CLIMATE CHANGE

9.2.1 Study: Climate Change
Describe effects of air pollution on the natural systems that regulate Earth's climate. Analyze the historical trends observed in global climate data. Relate human activities to observed changes in global climate. Evaluate differing views on global warming and climate change.
Duration: 1 hr

9.2.2 Quiz: Climate Change
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

9.2.3 Study: Effects of Climate Change
Summarize scientists' predictions about the effects of global climate change on the biosphere. Evaluate differing views on global warming and climate change.
Duration: 1 hr

9.2.4 Quiz: Effects of Climate Change
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

9.2.5 Checkup: Environmental Change
Describe effects of air pollution on the natural systems that regulate Earth's climate. Analyze the historical trends observed in global climate data. Relate human activities to observed changes in global climate. Evaluate differing views on global warming and climate change. Summarize scientists' predictions about the effects of global climate change on the biosphere. Discuss the validity and impact of scientific research on environmental issues related to human activities.
Duration: 30 mins

9.2.6 Read: Global Climate Change
Read about global climate change.
Duration: 1 hr 30 mins

9.2.7 Quiz: Global Climate Change
Take a quiz to assess your understanding of the material.
Duration: 45 mins; Scoring: 20 points

9.2.8 Lab: Investigate Dissolved Oxygen Levels
Explore dissolved oxygen levels.
Duration: 1 hr 30 mins; Scoring: 40 points
Wet lab

9.2.9 Discuss: Investigate Dissolved Oxygen Levels
Analyze data by using data tables, calculating the range and average of a set of measurements, and identifying sources of error. Evaluate lab procedures and results in a discussion with your peers.
Duration: 20 mins; Scoring: 10 points

LESSON 3 OVERVIEW: GLOBAL ENVIRONMENTAL POLICIES

9.3.1 Study: Protecting Environmental Quality
Summarize the goals and provisions of international treaties and protocols that address the effects of human activities on the environment, including the Antarctic Treaty System, Montreal Protocol, and Kyoto Protocol. Evaluate the effects of international treaties and protocols on environmental quality and global cooperation.
Duration: 1 hr

9.3.2 Quiz: Protecting Environmental Quality
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

9.3.3 Study: Protecting Wildlife and Biodiversity
Summarize the goals and provisions of international treaties and protocols that address biodiversity, such as the United Nations' Convention of International Trade in Endangered Species (CITES), the RAMSAR Convention on Wetlands, the International Treaty on Plant Genetic Resources for Food and Agriculture, and the Convention on Biological Diversity. Evaluate the effects of international treaties and protocols on environmental quality and global cooperation.
Duration: 1 hr

9.3.4 Quiz: Protecting Wildlife and Biodiversity
Take a quiz to assess your understanding of the material.
Duration: 15 mins; Scoring: 20 points

9.3.5 Practice: Global Environmental Policies
Summarize the goals and provisions of international treaties and protocols that address the effects of human activities on the environment, including the Antarctic Treaty System, Montreal Protocol, and Kyoto Protocol. Summarize the goals and provisions of international treaties and protocols that address biodiversity, such as the United Nations' Convention of International Trade in Endangered Species (CITES), the RAMSAR Convention on Wetlands, the International Treaty on Plant Genetic Resources for Food and Agriculture, and the Convention on Biological Diversity. Evaluate the effects of international treaties and protocols on environmental quality and global cooperation. Discuss the validity and impact of scientific research on environmental issues related to human activities.
Duration: 30 mins; Scoring: 10 points

9.3.6 Read: Global Environmental Policies
Read about global environmental policies.
Duration: 1 hr 30 mins

9.3.7 Quiz: Global Environmental Policies
Take a quiz to assess your understanding of the material.
Duration: 45 mins; Scoring: 20 points

9.3.8 Explore: Biodiversity Hot Spots
Summarize the process of natural selection and its role in biological evolution. Explain the importance of biodiversity in the biosphere.
Duration: 1 hr 30 mins; Scoring: 30 points

LESSON 4 OVERVIEW: GLOBAL CHALLENGES WRAP-UP

9.4.1 Project: Part II — Explore Sustainability for Your Local Environment
Identify your state and local legislation designed to protect the environment and natural resources. Evaluate the effects of national, state, and local environmental and resource protection laws on your local environment. Identify sustainable practices that have been adopted in your local environment. Recommend practices that might contribute to the sustainability of your local environment.
Duration: 1 hr 30 mins; Scoring: 40 points

9.4.2 Test (CST): Global Challenges
Take a computer-scored test to assess what you have learned in this unit.
Duration: 30 mins; Scoring: 50 points

UNIT 10: SEMESTER 2 WRAP-UP

LESSON OVERVIEW: SEMESTER 2 WRAP-UP

10.1.1 Exam: Semester 2 Computer-Scored Exam
Take a computer-scored exam to demonstrate your mastery of concepts and skills covered in this semester.
Duration: 40 mins; Scoring: 100 points

Course Credit

The course grade will be calculated as follows:

- 50% coursework average;
- 50% summative assessment average, including the final exam;
- A passing course grade is 70 or higher.

Students must attempt all assignments in the course. The final exam will not be available until all assignments have been accepted and graded by the teacher.

Students who score below 70% on the final exam will be eligible for one re-exam opportunity.

Coursework

The graded assignments within each unit are formative in nature. This means that they are designed to assist you in applying and demonstrating the unit concepts, as well as identifying areas in which you need additional review. You may use all the unit's learning activities to assist you as you complete the graded assignments.

Summative Assessments

Summative assessments are those that allow you to demonstrate mastery of the course objectives. For summative assessments, you will NOT be allowed to use the learning materials. These are opportunities for you to show what you have learned by that point in the course. The summative assessments for this course are as follows:

- Unit Tests **(20% of Course Grade)**
- Final Exam **(30% of Course Grade)**

Course Completion and Extensions

- Students may not complete the course in less than 30 days.
- All courses expire six months after the enrollment date. Student may purchase a single three-month extension for a fee.
- Extensions are non-refundable and non-transferrable.

Academic Integrity

It is the aim of the faculty of Texas Tech University to foster a spirit of complete honesty and high standard of integrity. The attempt of students to present as their own any work not honestly performed is regarded by the faculty and administration as a most serious offense and renders the offenders liable to serious consequences, possibly suspension.

“Scholastic dishonesty” includes, but is not limited to, cheating, plagiarism, collusion, falsifying academic records, misrepresenting facts, and any act designed to give unfair academic advantage to the student (such as, but not limited to, submission of essentially the same written assignment for two courses without the prior permission of the instructor) or the attempt to commit such an act.

Student Expectations

You will be expected to log into the Blackboard course regularly to be aware of possible announcements/reminders and to pace your progress in the course.

Students are expected to maintain an online environment conducive to learning, which includes “netiquette” (Internet etiquette). Please review the basic rules for Online Discussion Netiquette. Ensure that your email messages, discussion board postings, and other electronic communications are thoughtful and respectful. Diverse opinions are welcome in this course, and you are expected to demonstrate an open mind and courtesy when responding to the thoughts and ideas of others.

The following are prohibited:

- making offensive remarks in email or the discussion board;
- using inappropriate language or discussing inappropriate topics online;
- spamming;
- hacking;
- using TTU or Blackboard email or discussion boards for commercial purposes;
- using all caps (considered shouting in online communications); and
- cyber-bullying or online harassment of any type.

Inappropriate behavior shall result in consequences ranging from a request to correct the problem, to removal from the course or even the university, depending on the severity of the behavior. Disciplinary actions will be taken according to the TTU K-12 Student Handbook.

Communication

- You can expect a reply from your instructor within 2 business days.
- Use the Blackboard Course Messages tool for sending messages to your instructor.

Submitting Assignments

You will submit all assignments through the Blackboard Assignment Tool, rather than by email. For assignments that require you to upload a PDF or other document, please title your assignment files "lastName_firstName_assignmentName.*xxx* (.pdf, .doc, .xl, .jpg, etc.)".

Technical Difficulties

Getting Help

For student assistance with Blackboard, visit TTU K-12 Support.

Computer Problems

A working computer is necessary for online coursework. Computer problems will not be accepted as a valid reason for failure to complete course activities within the allotted time frame. Identify a second computer, before the course begins, that you can use if you experience computer problems.

Server Problems

When the Blackboard server needs to be taken down for maintenance, the Blackboard administrator will post an announcement in your course informing you of the time and date. If the server experiences unforeseen problems, your course instructor will notify you.

Lost or Corrupted Files

You must keep/save a copy of every project/assignment on an external disk or personal computer. In the event of any kind of technology failure (e.g., Blackboard server crash or virus infection, students' own computer problems, loss of files in cyberspace, etc.) or any disputes, the instructor may request or require you to resubmit the files. In some instances, the instructor may need to open another attempt within Blackboard, so communication with your instructor is critical in these circumstances.