

**CAREER  
PATHS**

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# ENVIRONMENTAL ENGINEERING



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# ENVIRONMENTAL ENGINEERING

Book

**1**

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## Scope and Sequence

Unit	Topic	Reading context	Vocabulary	Function
1	The Environmental Engineer	Article	advise, apply, conservation, environment, environmental engineer, evaluate, impact, monitor, pollution, prevent, resources	Asking about interests
2	The Earth	Course description	atmosphere, biosphere, core, crust, geosphere, hydrosphere, lithosphere, mantle, stratosphere, troposphere	Describing order
3	Ecosystems	Letter	abiotic, biotic, community, component, ecosystem, genetic diversity, habitat, organism, population, species	Describing positive changes
4	Biomes and Aquatic Systems	Webpage	aquatic life zone, biome, coastal zone, coral reef, desert, grassland, inter-tidal zone, ocean, open sea, rainforest, saltwater, savanna, tundra	Expressing excitement
5	Weather	Blog	cloud cover, humidity, meteorology, moisture, precipitation, pressure, short-term, temperature, weather, wind speed	Asking for repetition
6	Climate	Textbook	average, climate, current, elevation, Equator, latitude, pattern, pole, prevailing wind, range, rotation, terrain	Talking about averages
7	Basic Units of Life	Textbook	cell, chromosome, DNA, eukaryotic, gene, genetic information, multicellular, nucleus, prokaryotic, unicellular	Making a comparison
8	Measurements 1	Chart	acre, Celsius, Fahrenheit, gallon, hectare, imperial, kilogram, kilometer, liter, meter, metric, mile, pound, yard	Making a request
9	Basic Numbers and Math	Chart	add, divide by, equal, hundred, less, minus, multiply by, over, plus, subtract, times	Giving a reminder
10	Measurements 2	Employee guide	amount, area, base unit, concentration, cubic meter, derived unit, Kelvin, mole, SI, square meter, thermodynamic temperature, volume	Asking for clarification
11	Tables and Graphs	Email	bar graph, column, legend, line graph, pie chart, row, scatter diagram, table, x-axis, y-axis	Correcting an error
12	Describing Change	Article	decline, decrease, expand, fluctuate, increase, plummet, rise, shrink, skyrocket, stabilize	Describing changes
13	Presentations	Letter	body language, cue card, eye contact, handout, presentation, project, review, signpost, summarize, visual aid	Giving a compliment
14	Properties of Matter	Textbook	atom, atomic number, compound, electron, element, ion, mass number, matter, molecule, neutron, proton	Correcting yourself
15	Energy	Information excerpt	conserve, electromagnetic radiation, energy, energy efficiency, energy quality, heat, kinetic energy, potential energy, transfer, work	Giving a summary

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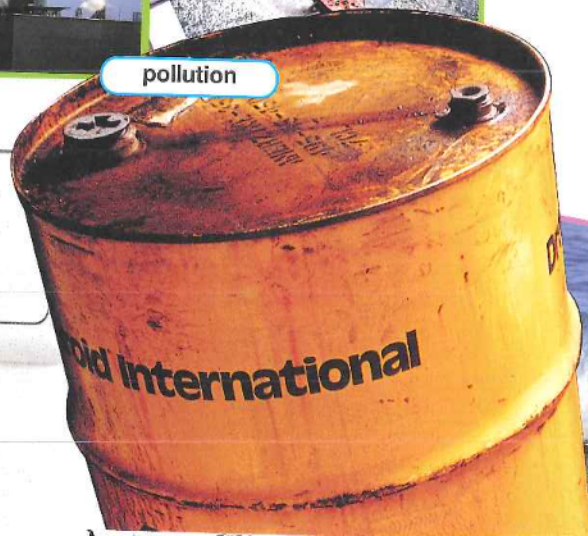


## Is Environmental Engineering Right for You?

Many people want to help the **environment**. **Environmental engineers** make it their career. They **apply** engineering skills to environmental problems. Here are some common duties of environmental engineers:

- **Evaluate** the **impact** of proposed projects. The goal is to **prevent** or minimize any harm to the environment.
- **Monitor** air and water **pollution** levels. They may **advise** authorities about how to reduce them.
- Design systems to increase **conservation** of **resources**. A typical project might be a waste water system.

Environmental engineers work with various organizations. Working together, they try to protect our environment. If this sounds interesting, consider learning more!



### Get ready!

1 Before you read the passage, talk about these questions.

- 1 What are some problems that the environment is facing?
- 2 What kinds of skills does a person need to be an environmental engineer?

### Reading

2 Read the article. Then, choose the correct answers.

- 1 What is the purpose of the article?
  - A to recruit environmental engineers
  - B to list a job opening for an environmental engineer
  - C to describe what an environmental engineer does
  - D to describe how to become an environmental engineer
- 2 Which of the following is NOT listed as a duty of an environmental engineer in the article?
  - A monitoring air pollution levels
  - B evaluating soil conditions
  - C designing waste water systems
  - D assessing future projects
- 3 What is the main goal when evaluating potential projects?
  - A to reduce air pollution
  - B to improve water quality
  - C to safely deal with solid waste
  - D to prevent harm to the environment



## Vocabulary

3 Match the words (1-8) with the definitions (A-H).

- |             |                  |                   |
|-------------|------------------|-------------------|
| 1 __ apply  | 4 __ evaluate    | 7 __ pollution    |
| 2 __ advise | 5 __ resources   | 8 __ conservation |
| 3 __ impact | 6 __ environment |                   |

- A the act of trying to save resources  
 B to give an expert opinion  
 C the area in which a person or thing lives  
 D to look at something closely and critically  
 E a large change  
 F things that people use for fuel, food, or shelter  
 G damage caused to water, air, and land by harmful substances  
 H to use something for a particular purpose

4 Read the sentence pairs. Choose which word or phrase best fits each blank.

1 environmental engineer / pollution

- A The \_\_\_\_\_ came up with a new water cleaning system.  
 B Cars can cause a lot of \_\_\_\_\_ in the air.

2 monitor / prevent

- A If we are careful we can \_\_\_\_\_ environmental degradation.  
 B It is our duty to \_\_\_\_\_ our water consumption.

5 Listen and read the article again. What are some duties of an environmental engineer?

## Listening

6 Listen to a conversation between an interviewer and an interviewee. Mark the following statements as true (T) or false (F).

- 1 \_\_ The man will study environmental engineering this year.  
 2 \_\_ The man has experience in wastewater management.  
 3 \_\_ The man has not worked in soil remediation.

7 Listen again and complete the conversation.

Interviewer: I'm glad to hear that. What kind of 1 \_\_\_\_\_ do you have?

Interviewee: I have a degree in environmental engineering. I also have 2 \_\_\_\_\_ of experience in my current position.

Interviewer: What exactly 3 \_\_\_\_\_?

Interviewee: Mainly wastewater and solid 4 \_\_\_\_\_.

Interviewer: I see. Do you have any experience with 5 \_\_\_\_\_?

Interviewee: 6 \_\_\_\_\_, yes.

## Speaking

8 With a partner, act out the roles below based on Task 7. Then, switch roles.

USE LANGUAGE SUCH AS:

What brought you to environmental engineering?  
 What kind of experience do you have?  
 Do you have any experience with ...?

Student A: You are an interviewer. Talk to Student B about:

- why he or she chose the field of environmental engineering
- his or her experience in the field
- a specific skill you're looking for

Student B: You have an interview for an environmental engineer position. Talk to Student A about the position.

## Writing

9 Use the conversation from Task 8 to complete the interview sheet.

### GREEN TECHNOLOGIES INTERVIEW SHEET

CANDIDATE NAME: \_\_\_\_\_

INTERVIEWER NAME: \_\_\_\_\_

MOTIVATION FOR ENTERING THE FIELD: \_\_\_\_\_

EXPERIENCE: \_\_\_\_\_

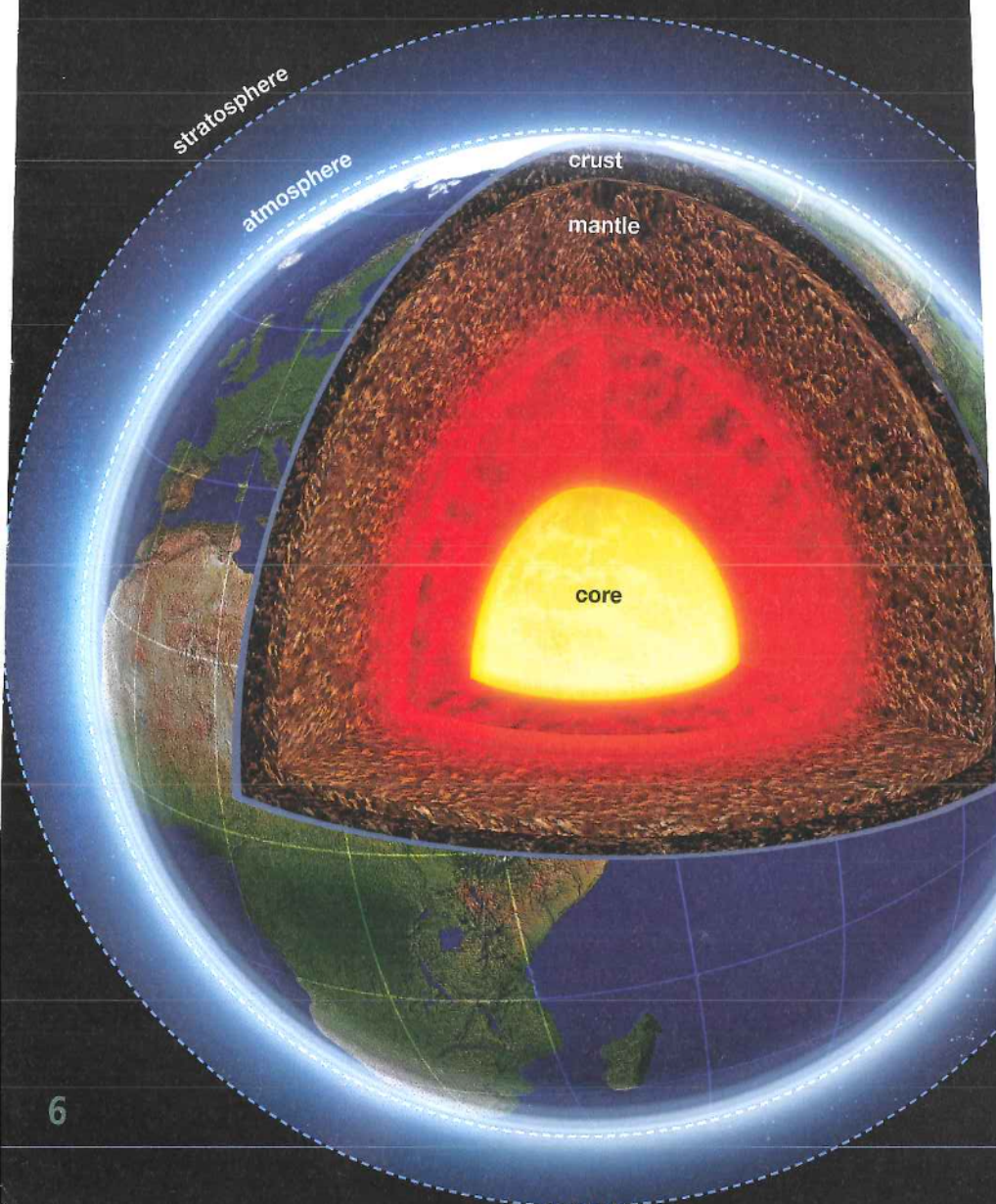
## EPS 101

INTRO TO EARTH  
SCIENCES

This course introduces students to the different Earth layers. We begin with the **geosphere**. Students identify the **mantle** and **crust**. These make up the **lithosphere**. We also discuss the Earth's **core**.

Next, we move above the Earth's surface. We'll talk about the layers of the **atmosphere**. These are the **troposphere** and the **stratosphere**. The last topic we cover is the **hydrosphere**. The hydrosphere includes all water on Earth. It also includes water vapor in the atmosphere.

The **biosphere** is of interest throughout the course. We'll learn how each sphere contributes to life. This is the overarching theme of the course.



## Get ready!

- 1 Before you read the passage, talk about these questions.
- 1 What are the layers of the Earth's surface?
  - 2 In which layer of the Earth is life found?

## Reading

- 2 Read the course description. Then, choose the correct answers.

- 1 What is the purpose of the class?
  - A to compare how pollution impacts different layers of the Earth
  - B to examine life and the layers of the Earth
  - C to introduce students to the field of environmental engineering
  - D to show the impact of one layer of the Earth on the others
- 2 Which of the following make up the lithosphere?
  - A the geosphere and the crust
  - B the core and the mantle
  - C the crust and the core
  - D the mantle and the crust
- 3 Which of the following is part of Earth's surface and the atmosphere?
  - A the stratosphere
  - B the hydrosphere
  - C the lithosphere
  - D the troposphere

## Vocabulary

- 3 Place the words from the word bank under the correct headings.

### Word BANK

lithosphere hydrosphere mantle troposphere  
atmosphere geosphere biosphere stratosphere

At or below Earth's surface	Above Earth's surface	Can be above Earth's surface

- 4 Read the sentences and choose the correct words.
- The **biosphere/core** is at the center of the Earth.
  - The surface of the Earth, made of rock and soil, is called its **crust/hydrosphere**.
  - The **atmosphere/mantle** is a layer below Earth's crust.
- 5 Listen and read the course description again. What is the unifying theme of the course?

## Listening

- 6 Listen to a conversation between a student and a professor. Mark the following statements as true (T) or false (F).
- \_\_\_ The woman is confused about the order of the spheres.
  - \_\_\_ The man recommends starting at the top of the atmosphere.
  - \_\_\_ The woman states the order of the spheres incorrectly.
- 7 Listen again and complete the conversation.

**Student:** I'm confused about the 1 \_\_\_\_\_ of the spheres.

**Professor:** Okay, let's start with the geosphere. Starting at the surface, which layer 2 \_\_\_\_\_?

**Student:** First is the 3 \_\_\_\_\_, right? And then comes the 4 \_\_\_\_\_?

**Professor:** Not quite. Those two make up the 5 \_\_\_\_\_. But the crust comes first.

**Student:** Oh, I see. And then the core is next.

**Professor:** Exactly. That's the geosphere. But the 6 \_\_\_\_\_ has more layers.

## Speaking

- 8 With a partner, act out the roles below based on Task 7. Then, switch roles.

### USE LANGUAGE SUCH AS:

The ... comes first, right?

Then the ...

What's next?

**Student A:** You are a student. Talk to Student B about:

- a problem you're having with the Earth's atmosphere
- which sphere comes first
- which sphere comes after

**Student B:** You are a professor. Talk to Student A about the Earth's spheres.

## Writing

- 9 Use the course description and the conversation from Task 8 to complete the worksheet.

EPS 101

## Earth's Spheres Worksheet

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Name 3 layers in the geosphere:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Name 2 spheres that can be found in the Earth's atmosphere:

\_\_\_\_\_  
\_\_\_\_\_

## Get ready!

1 Before you read the passage, talk about these questions.

- 1 How are the species in an ecosystem connected?
- 2 Why is genetic diversity important?

Sunday Edition

## JACKSON TIMES

## Letter to the Editor

I am concerned about the Darby River. The river is home to a rare **species** of fish. They are called southern pygmy perch. This particular **population** is shrinking quickly.

Their **habitat** is in danger. Industrial waste negatively impacts the **ecosystem**. The fish are running out of food. Waste in the water kills plant life. Without those plants, these **organisms** have fewer food options.

As fish numbers dwindle, other **biotic** creatures suffer. Birds that eat the perch will starve and die.

The whole **community** is connected. Even if an **abiotic component** is compromised, it will affect everyone.

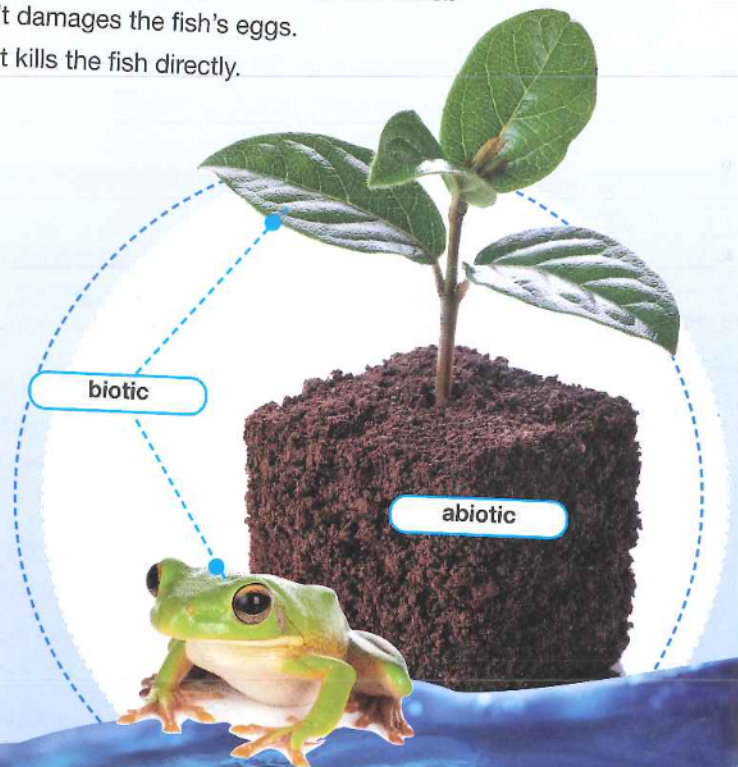
We must put a stop to this. We must preserve the **genetic diversity** of the Darby River!

Respectfully,  
Edwin Jace  
Environmental Engineer

## Reading

2 Read the letter to the editor. Then, choose the correct answers.

- 1 What is the main purpose of the letter?
  - A to describe genetic diversity at the Darby River
  - B to classify the Darby River ecosystem
  - C to give information about the southern pygmy perch
  - D to explain a threat to the Darby River ecosystem
- 2 Which is NOT a part of the Darby River ecosystem?
  - A fish    B birds    C plants    D humans
- 3 How is the toxic waste affecting the fish?
  - A It kills a plant they rely on for food.
  - B It reduces the oxygen levels in the water.
  - C It damages the fish's eggs.
  - D It kills the fish directly.



population

species