Bishop McGuinness High School
AP Environmental Science 2025-2026: Summer Work

You do not need to purchase a textbook, but if you choose to do so the recommended title is:

Environmental Science for the AP® Course, 4th ed., by Andrew Friedland and Rick Relyea (Bedford, Freeman, and Worth, 2023)

The AP Environmental Science Curriculum centers around the 4 Big ideas and how they are interconnected. The goal of the course is to analyze environmental concepts and processes with the goal of proposing and justifying solution to environmental problems our society faces every day.

1. Energy Transfer:
    a. Energy conversions underlie all ecological processes. Energy cannot be created; it must come from somewhere. As energy flows through systems, at each step, more of it become unusable.
2. Interaction Between Earth Systems:
    a. The Earth is one interconnected system. Natural systems change over time and space. Biogeochemical systems vary in ability to recover from disturbances.
3. Interactions between Different Species and the Environment:
    a. Humans alter natural systems and have had an impact on the environment for millions of years. Technology and population growth have enabled humans to increase both the rate and scale of their impact on the environment.
4. Sustainability:
    a. Human survival depends on developing practices that will achieve sustainable systems. A suitable combination of conservation and development is required. The management of resources is essential. Understanding the role of cultural, special and economic factors is vital to the development of solutions.

These ideas support the nine major course units:

- The Living World: Ecosystems
- The Living World: Biodiversity
- Populations
- Earth Systems and Resources
- Land and Water Use
- Energy Resources and Consumption
- Atmospheric Pollution
- Aquatic and Terrestrial Pollution
- Global Change

Under no circumstances will Ai technology, Chat GPT, or plagiarism be able to be used on this assignment. Any instance of chat GPT or plagiarism will result in an automatic zero for this assignment and office referral.

Part 1: Welcome Letter Assignment (20 points)

APES as a course involves a great deal of collaborative learning. It is important to me, as an instructor, that I get to know you as a person. It is also important that you now, as a young adult getting ready to enter college, work on email communication. I expect that you may struggle throughout the year, and I hope that you will keep an open line of communication with me as well as your other instructors. You will write a letter of introduction to me. Please remember you're likely writing a letter that is making your first impression on a new teacher, so check for grammar/spelling and appropriate phrasing before sending.

When you are emailing an instructor, you need to ensure your email contains several things.

1. Subject Line:
    a. The subject line needs to include your name, which class you are in, and which period the class is followed by a brief description on what the email is in relation too.
        i. Example: Joe Smith APES Questions about homework due date
2. Addressing the instructor properly → hhedrick@bmhs.us
    a. You need to include a proper introduction
        i. Example: Dear Mrs. Hedrick, Good Afternoon Mrs. Hedrick, etc.
    b. You are emailing an instructor, not texting your best friend

In your letter you will need to include:

1. Introduce yourself
    a. What is your name?
    b. Do you have a nickname you go by?
    c. What grade are you in?
2. Courses:
    a. What science classes have you taken so far?
    b. How many AP classes have you taken before this year?
    c. What subject area(s) are you most interested in continuing in college?
    d. Is there anything that you've especially liked or disliked about your earlier biology/science classes?
3. Yourself
    a. What do you like to do (hobbies, sports, music, interests, etc.)?
    b. Tell me about your family (siblings, pets, who do you live with? how would you describe them?)
    c. Do you have a job or plan on getting a job next year/ What kind?
4. Learning
    a. What are your personal strengths when it comes to learning new material?
    b. What causes you to struggle in a course? How do you address that challenge?
    c. How would you describe yourself as a team or group member?
    d. A lot of times students say that they will learn best with interactive activities, what does interactive mean to you?
5. APES
    a. Why are you taking this course? What do you hope to accomplish/gain from this course?
    b. What are you looking forward to most in APES?
    c. Do you have any concerns coming into APES this year?

Part 2: Current Events: (30 points; 10 each)

Our world and relationship to it is ever changing, especially in light of all the media surround global climate change. Analyzing news articles and thinking critically about what we see perpetuated on social media is an extremely important skills in this class as well as going forward in your life especially at university.

You will need to find 3 current event/news articles related to the units listed on the first page. By current article, I mean with in the past 5 years, so the farthest back you can go is 2020. You will need to complete a Science Text New Analysis Worksheet for each article. A copy is provided below along with the grading rubric.

Article #1

<table>
<tr><td colspan="2">Title of Article/ Date Published/ News Source:</td></tr>
<tr><td>Claim #1:</td><td>Describe how the evidence backs up the claim:</td></tr>
<tr><td>Claim #2:</td><td>Describe how the evidence backs up the claim:</td></tr>
<tr><td>Claim #3:</td><td>Describe how the evidence backs up the claim:</td></tr>
<tr><td colspan="2">Discuss the Author’s perspective: The point of view and/or attitude toward the topic (inform, persuade, entertain):</td></tr>
</table>

Discuss the Author's Assumptions: The points that are assumed to be true. Can be facts, analysis, or values:
Discuss the credibility of this source: Where is the text from? Is it an established source of information? Does it use sensational headlines (click-bait)?
List two unanswered questions after reading this article OR list two follow-up questions to the research discussed in the article:

Article #2

Title of Article/ Date Published/ News Source:	
Claim #1:	**Describe how the evidence backs up the claim:**
Claim #2:	**Describe how the evidence backs up the claim:**
Claim #3:	**Describe how the evidence backs up the claim:**
Discuss the Author's perspective: The point of view and/or attitude toward the topic (inform, persuade, entertain):	
Discuss the Author's Assumptions: The points that are assumed to be true. Can be facts, analysis, or values:	

Discuss the credibility of this source: Where is the text from? Is it an established source of information? Does it use sensational headlines (click-bait)?
List two unanswered questions after reading this article OR list two follow-up questions to the research discussed in the article:

Article #3:

Title of Article/ Date Published/ News Source:	
Claim #1:	**Describe how the evidence backs up the claim:**
Claim #2:	**Describe how the evidence backs up the claim:**
Claim #3:	**Describe how the evidence backs up the claim:**
Discuss the Author's perspective: The point of view and/or attitude toward the topic (inform, persuade, entertain):	
Discuss the Author's Assumptions: The points that are assumed to be true. Can be facts, analysis, or values:	

Discuss the credibility of this source: Where is the text from? Is it an established source of information? Does it use sensational headlines (click-bait)?

List two unanswered questions after reading this article OR list two follow-up questions to the research discussed in the article:

	3	2	1
Claims	Claims are accurate, different, complete, and in the student's own words.	Some claims are not accurate, different, complete or in own words.	Many claims are not accurate, different, complete or in own words.
How the Evidence Backs Up the Claim	Provides and discusses a piece of strong evidence to back up each claim.	Evidence and discussion are appropriate to back up the claims, but somewhat weak for one or more claims.	Weak evidence and discussion to back up the claim.
Author's Assumptions, Prespective, Credibility of Source, Follow-up Question	All 4 boxes (assumptions, perspective, credibility, follow-up) provide accurate and strong discussion.	Some of the discussion in the 4 boxes is strong.	Weak discussion in some or all of the 4 boxes.

Part #3 Dimensional Analysis: (20 points)

One of the six science practices is Mathematical Routines. This also includes what is called dimensional analysis. Students must be able to apply appropriate mathematical relationships to solve a problem with work shown to receive full credit. Here we will practice some dimensional analysis style problems to get your comfortable with proper set up.

1. Introductory videos on dimensional analysis:
    a. Level 1: https://youtu.be/Eh0SQhMUhAU
    b. Level 2 https://youtu.be/bu12pfoH9Ng
    c. Level 3: https://www.youtube.com/watch?v=NDpXzOMkxak&list=PLT3eSyRJ7aXJnDJiRgRk7opTVNfblPZSk&index=3

Practice Problems: Now that you know a little more about dimensional analysis, it is time to practice on your own. Make sure to show your work for each problem and make sure to always include units, no naked numbers!

1. You are a caterer specializing in children's birthday parties. You have 12 birthdays to cater next week. You must bake 2 cakes for each party. Each cake will have 6 candles on it. How many birthday candles do you need for the 12 parties?
2. A manager for a factory farm is ordering corn. Each animal eats 2.3 kg of corn per day. Considering all the inputs associated with growing corn in an industrialized manner (fertilizers, pesticides, machinery, etc.) it takes 2 liters of oil to produce 10 grams of corn. How much oil is used to grow the corn for a one week supply of corn for the 3000 animals the manager must feed?
3. My bathroom mirror is lit by eight 75 watt bulbs. Each bulb consumes 75 watt-hours (Wh) per hour that it is on. The lights are on for approximately 2 hours each day. How many kilowatt-hours (kWh) of energy are consumed by the bathroom lights in 1 year?
4. Approximately 220 million tires are discarded in the U.S. each year. These tires present a disposal problem because they take up space, harbor pests, and have been known to catch fire. One tire can generate about 250,000 BTUs (1 BTU = 3×10^{-4} kWh) when it is burned. The average American home consumes about 10,000 kWh of electricity per year. How many tires would be needed to meet the annual electricity demand of ten homes for one year if the production of electricity from tires is 50% efficient?
5. After determining your ecological footprint, you discovered that your energy consumption is very high. Your family uses 6,896,551 Btu's (British Thermal Unit) of electrical power per month. and how much was your electric bill? 1 Btu = 0.00029 kWh; 1 kWh costs $0.16
6. If the Recommended Daily Allowance (RDA) for vitamin C is 60 mg per day and there are 70 mg of vitamin C per 100 g of orange, how many 3.0 oz. oranges would you have to eat each week to meet this requirement?