



AP Environmental Science Summer Assignment



Welcome to APES! AP Environmental Science is a lab-based course that is designed to examine ecological, biological, chemical, physical and environmental concepts and interactions. In this course we will examine the natural processes that occur in our world and the ways in which we as humans alter those natural processes. It is my hope that after taking this course, you have a greater appreciation for the natural world around you and I hope that you are inspired to "THINK GLOBALLY and ACT LOCALLY!"

The objective of this summer assignment is to get you thinking environmentally and to refresh some previously learned information. I hope that you have an enjoyable, exciting, and educational summer! I look forward to meeting you in September!

General Guidelines:

- **Read the directions for each part carefully!**
- Join my Google Classroom TODAY - The class code is **aaupigl**
- This summer assignment is due the first Monday (September 9th) we have school in September.
- Each part should be "turned in" to Google Classroom.
- Each part of the project must be typed and clearly labeled
- Each student is responsible for submitting their own project.

Part 1: Experience the Natural World - Visit a natural outdoor area, go for a walk, and make some observations. Please go **beyond** your backyard. Here are some nearby places you could visit or you could go farther.

- South Shore Nature Center
Bayview Avenue
East Islip, NY
(631) 224-5436
- Seatuck National Wildlife Refuge
Islip, NY
(631) 286-0485
- Heckscher State Park
East Islip, NY
(631) 581-2100
- Connetquot River State Park Preserve
Oakdale, NY
(631) 581-1005
- Bayard Cutting Arboretum
Great River, NY
(631) 581-1002
- Sunken Forest Preserve
Sailors Haven, Fire Island National Seashore
(631) 597-6183

On your walk, please do the following:

- Record the time, date, location, approximate duration of your outing.
- Record brief observations of the flora and fauna, the geology of the area, the type of path you are walking on (grass, sand, rock, etc). Specific details are not necessary (ex., "I saw two black turtles sunning themselves on a log...") This should be one paragraph.
- Take photos during your walk. Include your favorite 3 photos.
- Find a quiet spot to sit for at least five minutes. Close your eyes and listen to the sounds around you. What sounds are natural? Are there human made sounds? Write a reflection of this experience. This should be one paragraph.
- Respond to the following in a brief paragraph:
 - Is this natural area really "natural"? Explain. How do you think it appeared 25 years ago, 200 years ago, and 20,000 years ago?*

Part 2: Chemistry Review –

A. For each of the following, write out the chemical name that goes with the symbol:

CO ₂	CO	C ₆ H ₁₂ O ₆	CH ₄	N ₂	NO ₂	Hg
NH ₃	NH ₄	O ₂	O ₃	P	PO ₄ ³⁻	S
SO ₂	SO ₃	H ₂ SO ₄	Pb	U	Rn	

B. Write at least a paragraph that explains the following:

1. What is the pH scale? What does it measure?
2. How do the numbers on the pH scale compare? Example – is a pH of 4 twice as strong as a pH of 2? Hint- the pH scale is not linear!
3. What are the average pH ratings of the following common substances in the environment?

Cite all sources!!

- a. Blood
- b. Rain
- c. Freshwater (lake or river)
- d. Ocean water

Part 3: Current Events in Environmental Science:

The topics are as follows:

1. Human population growth
2. Invasive species
3. Food production, food safety
4. Fossil fuels (coal, oil, natural gas)
5. Renewable resources (solar, wind, geothermal, hydroelectric, etc.)
6. Nuclear energy
7. Air quality
8. Water quality (surface or groundwater)
9. Greenhouse gases and climate change
10. Recycling or another aspect of waste management (garbage)
11. Nature Conservancy, Sierra Club, World Wildlife Fund, or similar NGO (non governmental organization)
12. Overfishing, overhunting
13. Deforestation
14. Ozone depletion
15. Endangered Species or Extinct Species
16. Legislation or International Treaty dealing with an environmental issue.
17. Agriculture or Farming

A. Collect a copy of 1 article, published since January 1, 2020, relating to ONE environmental issue found on the list of topics. (An issue involves an environmental concern, not just some interesting scientific finding.) The sources may be scientific publications, popular magazines, newspapers or the like. Try the NY Times (especially Tuesdays), National Geographic, Discover Magazine, Natural History Magazine, as well as the more scholarly Scientific American, Science, Nature, etc. You may find it more convenient to look online, but you still must indicate the source.

Write at least 1 paragraph summarizing the content, and at least 1 paragraph discussing your reaction. For example, does the article teach you something new? Does it support or refute other information you have heard or read? Are there other points of view on this issue?

B. Provide a link to the article.

Part 4: Environmental Surveys / Ecological Awareness – Complete each survey and then write a **summary and reaction** for each.

A. Calculating your Water Footprint

Go to: <http://www.watercalculator.org/> and complete the water footprint calculator. Record how much water you use as a family. **Copy and paste or screenshot your results to include into your final document.**

After completing the survey, write a summary and a reaction to the survey.

- In one paragraph tell me what is meant by the term “water footprint” and tell me about the results of the survey and why you got the results you did.
- In a second paragraph tell me about your reaction to the results. Was any of the information in the survey surprising to you? What can you do to use less water?

B. Calculating your Carbon Footprint

Go to: www.nature.org/greenliving/carboncalculator/index.htm and find your **individual** carbon footprint. **Copy and paste or screenshot your results to include into your final document.**

After completing the survey, write a summary and a reaction to the survey.

- In one paragraph tell me what is meant by the term “carbon footprint” and tell me about the results of the survey and why you got the results you did.
- In a second paragraph tell me about your reaction to the results. Was any of the information in the survey surprising to you? What can you do to reduce your carbon footprint?

C. Calculating your Ecological Footprint

Go to: <https://www.footprintcalculator.org/> and find your ecological footprint. Copy and paste or screenshot your results to include into your final document.

After completing the survey, write a summary and a reaction to the survey.

- In one paragraph tell me what is meant by the term “ecological footprint” and tell me about the results of the survey and why you got the results you did. What are some areas suggested for improvement?
- In a second paragraph tell me about your reaction to the results. Was any of the information in the survey surprising to you? What can you do to reduce your ecological footprint?

Checklist:

Part 1: Score _____/25

- I have visited a natural outdoor area **beyond** my backyard.
- I have recorded observations during my outing.
- I have included my 3 favorite photos.
- I have written a reflection of this experience.
- I have responded to the following statement in a brief paragraph: *Is this natural area really "natural"?*
- I have "turned in" this part of the assignment to Google Classroom

Part 2: Score _____/25

- I have identified all of the chemical compounds and I am ready for a quiz.
- I have written at least one paragraph about pH and I am ready to explain it to someone else.
- I have cited all of the sources I used to find my information.
- I have "turned in" this part of the assignment to Google Classroom

Part 3: Score _____/25

- I have found an article, published after January 1, 2018, relating to ONE environmental issue found on the list of topics.
- The article is from a credible, reliable source
- I have written and submitted at least 2 paragraphs, at least 1 paragraph summarizing the content, and at least 1 paragraph discussing your reaction.
- I have provided a link to the article.
- I have "turned in" this part of the assignment to Google Classroom.

Part 4: Score _____/25

- I have completed all 3 ecological awareness surveys.
- I have copy and pasted my results into my final document.
- I have written a summary and reaction after completing each.
- I have "turned in" this part of the assignment to Google Classroom