

DE Environmental Science: Summer Assignment ENV 121 & ENV 122

Welcome to Dual Enrollment General Environmental Science at Arlington Tech—we are excited to have you! It is our hope that you will find the topics in this course both engaging and relevant to the world around you.

The first part of this course (ENV 121) focuses on the fundamental components and interactions that make up the natural systems of the earth, including basic physical, chemical, and biological principles with an emphasis on the interactions between humans and the environment. The second part of this course (ENV 122) builds upon these fundamental components and examines environmental science in the context of the societal implications, with a focus on sustainability.

Assignments may require college-level reading fluency, coherent written and oral communication, and basic mathematical skills.

This assignment has THREE parts and is to be completed independently following all directions provided to you. It is due on September 9, 2024.

Assignment	Estimated Time	Materials Required	Instructions	Points Possible
<i>Part I:</i> Introduction to Environmental Science	1 hour	<ul style="list-style-type: none"> Laptop (or other device) to view the video and the website for the UN Sustainable Development Goals (SDGs) Paper & Pen (blue or black ink is preferred) 	Take detailed, <u>handwritten</u> notes on one of the SDGs and answer reflection questions.	25 pts.
<i>Part II:</i> Scavenger Hunt	Varied	<ul style="list-style-type: none"> Mobile device (with camera) Laptop (or other device) to create a slide deck 	Create a slide deck (Canvas, PPT, Google) of your photographs with captions.	25 pts.
<i>Part III:</i> Interpreting Graphs	1-2 hours	<ul style="list-style-type: none"> Paper & Pencil 	Handwrite answers to problems, showing all work on a separate sheet of paper.	30 pts.
Conventions	<ul style="list-style-type: none"> Assignment is neat and complete Sources are cited when necessary All work is shown 			20 pts.
This assignment is your first grade for this course. It is worth a total of 100 points.				

Part I: Exploring the UN Sustainable Development Goals (SDGs)

You will be choosing an SDG to learn more about as it pertains to the world of Environmental Science. While there are 17 goals in total, these are the six that are most closely related to your topics of study within this course.



CLEAN WATER AND SANITATION



INDUSTRY, INNOVATION, AND INFRASTRUCTURE



SUSTAINABLE CITIES AND COMMUNITIES



RESPONSIBLE CONSUMPTION AND PRODUCTION



LIFE BELOW WATER



LIFE ON LAND

Directions:

1. First, view the video **Humans and the Environment | Essentials of Environmental Science** on YouTube, linked [here](#).
2. Next, go to the *UN Sustainable Development Goals* website, linked [here](#).
 - a. Choose one of the SDGs listed above to explore further.
 - b. Explore the news publications, websites, and infographics associated with your chosen SDG, and take detailed, handwritten notes about the topic. **Include a 5-8 paragraph summary of your SDG.**
3. On a separate page, reflect on your learning experience by answering the following questions in complete sentences. Cite your sources **using APA 7th Edition**.
 - a. What do you feel is the most significant issue within the field of environmental science? Justify your position. (1-2 paragraphs)
 - b. Is it important for students to understand the aspects of environmental science? Why or why not? (1-2 paragraphs)
 - c. Do you consider yourself to be environmentally conscientious? Explain. (1-2 paragraphs)

Citation Guidance:

Please DO NOT USE Citation Machine. It gives inaccurate citations with limited/assumed information.

Instead, use the Information about citations and style for **APA 7th Edition** at **Purdue Online Writing Lab (OWL)**, linked [here](#).

Part II: *Environmental Scavenger Hunt*

Directions: Find the items in the following scavenger hunt list. Proof should be obtained digitally in a photograph or video, and compiled into a slideshow or video.

To prove that it was you who did the work, YOU must appear in the photo WITH the item from the list.

Each photo should be on a separate slide with a caption that identifies the item from the list and provides an explanation or connection to an environmental science theme or topic.

Disclaimer: We reserve the right to show your slides in class, especially if they're great. :)

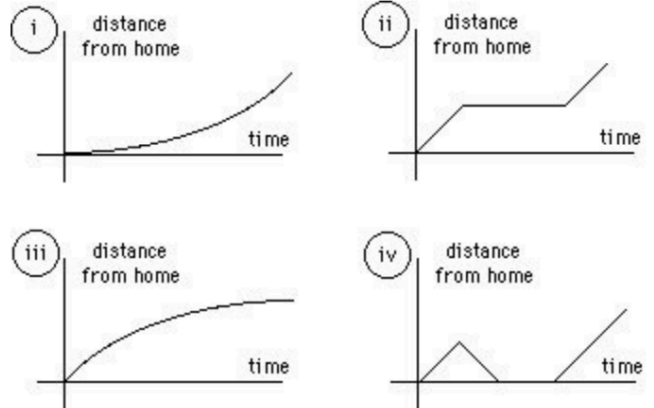
1. An herbivore eating a producer
2. Growing crops
3. An organic food item in the grocery store
4. A genetically modified food item
5. 3 pieces of litter from a public place
6. Product made from recycled materials
7. Renewable energy
8. A source of freshwater
9. Nonpoint or point source of pollution
10. Decomposition
11. Reuse of potential waste
12. Fossil fuel production, processing, or use
13. A worker in environment-related profession (with consent)
14. Farm-raised fish
15. A tree you cannot put your arms more than halfway around
16. A mineral that came from a mine
17. An electric or hybrid vehicle in use (i.e., not merely at a dealership, but can be parked)
18. An environmentally positive sight (i.e., something you think is helping the environment)
19. A LEED certified building
20. Source of air pollution that is not an automobile
21. Invasive species
22. Endangered species
23. A nonhuman thing in the environment you find extraordinarily beautiful
24. A Virginia emissions inspection station or RAPIDPASS location.
25. A phenomena that shows evidence of climate change (i.e. news story, weather event, etc.)

Part III: Interpreting Graphs

Directions: This section contains 10 questions requiring you to interpret data from different types of graphs. Each question contains multiple parts, so read them carefully to ensure that you know what is being asked. Show your work on a separate piece of paper.

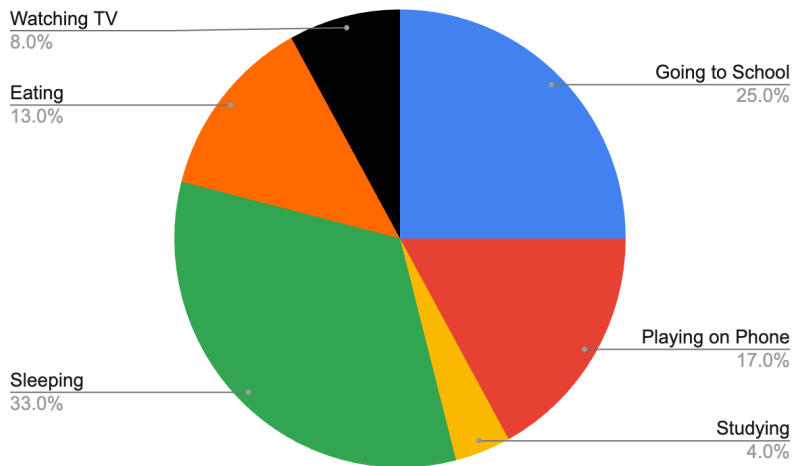
1. Identify the graph that matches each of the following stories:

- a. I had just left home when I realized I had forgotten my books so I went back to pick them up.
- b. Things went fine until I had a flat tire.
- c. I started out calmly, but sped up when I realized I was going to be late.
- d. I took the interstate to work, but as I got closer, traffic increased and slowed me down.



2. The pie graph below represents the typical day of a teenager. Answer these questions:

- a. What percent of the day is spent watching TV?
- b. How many hours are spent sleeping?
- c. What activity takes up the least amount of time?
- d. What activity takes up a quarter of the day?
- e. What two activities take up 50% of the day?
- f. What two activities take up 25% of the day?



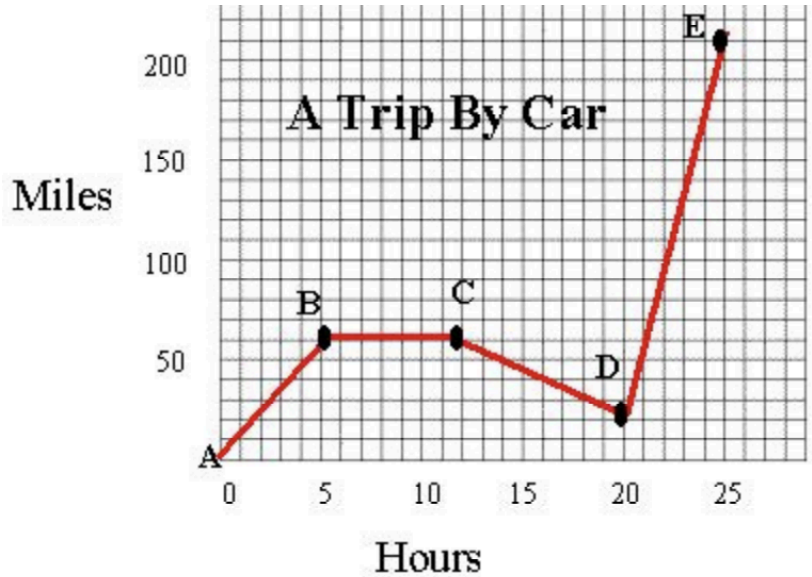
3. Answer these questions about the graph to the right:

- a. How many sets of data are represented?
- b. On approximately what calendar date does the graph begin?
- c. In what month does the graph reach its highest point?



4. Answer these questions about the line graph below:

- How many total miles did the car travel?
- What was the average speed of the car for the trip?
- Describe the motion of the car between hours 5 and 12?
- What direction is represented by line CD?
- How many miles were traveled in the first two hours of the trip?
- Which line represents the fastest speed?

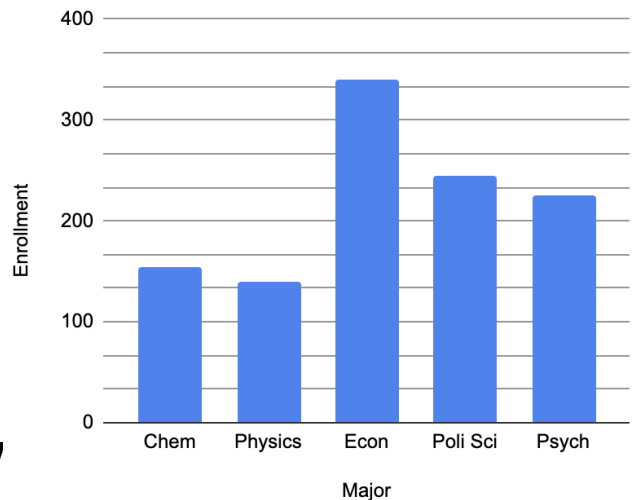


5. Answer these questions about the line graph on the left:

- What is the dependent variable on this graph?
- Does the price per bushel always increase with demand?
- What is the demand when the price is \$5 per bushel?

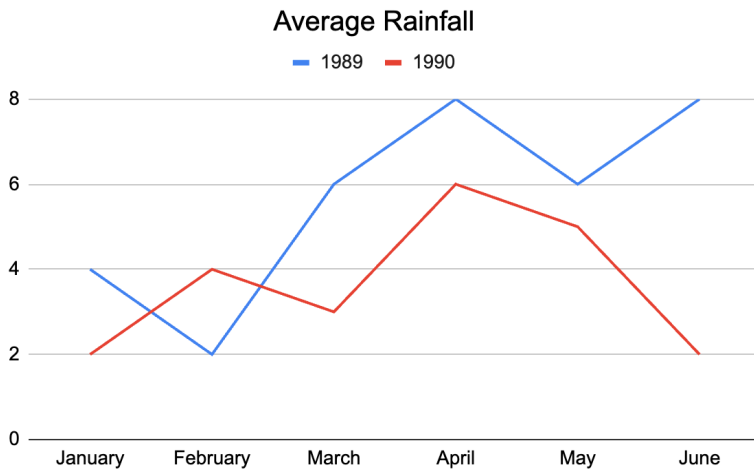
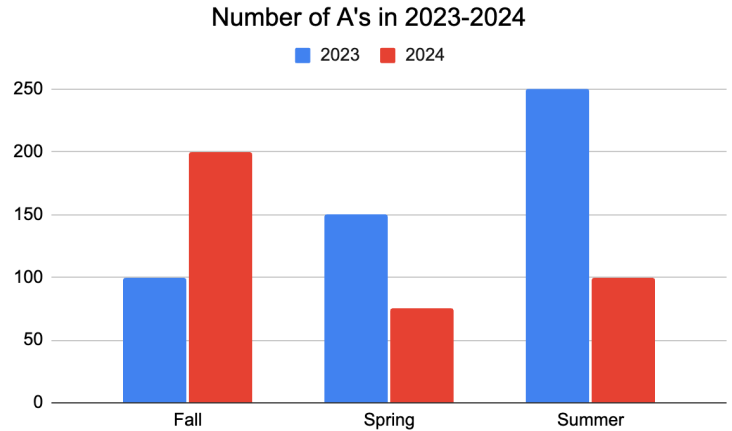
6. The bar graph below represents the declared majors of freshman enrolling at a university. Answer the following questions:

- What is the total freshman enrollment of the college?
- What percent of the students are majoring in physics?
- How many students are majoring in economics?
- How many more students major in poly sci than in psych?



7. This double bar graph below represents the number of A's earned in a particular college algebra class. Answer the following questions:

- How many A's were earned during the fall and spring of 2009?
- How many more A's were earned in the fall of 2010 than in the spring of 2010?
- In which year were the most A's earned?
- In which semester were the most A's earned?
- In which semester and year were the fewest A's earned?



8. Answer these questions about the double line graph to the left about average rainfall in inches:

- How much rain fell in March of 1989?
- How much more rain fell in February of 1990 than in February of 1989?
- Which year had the most rainfall?
- What is the wettest month on the graph?

9. Answer these questions about the data table on the right:

- What is the independent variable on this table?
- What is the dependent variable on this table?
- How many elements are represented on the table?
- Which element has the highest ionization energy?
- Describe the shape of the line graph that this data would produce?

Atomic Number	Ionization Energy (volts)
2	24.46
4	9.28
6	11.22
8	13.55
10	21.47

10. Answer the following using the solar system data table below:

- a. How many planets are represented?
- b. How many moons are represented?
- c. Which moon has the largest mass?
- d. Which planet has a radius closest to that of Earth?
- e. How many moons are larger than the planet Pluto?
- f. Which of Jupiter's moons orbits closest to the planet?
- g. Which planet is closest to Earth?

Solar System Data				
Name	Orbits	Distance from the Sun (km)	Radius (km)	Mass (kg)
Sun			697000	1.99×10^{30}
Jupiter	Sun	778000	71492	1.90×10^{27}
Saturn	Sun	1429000	60268	5.69×10^{25}
Uranus	Sun	1870990	25559	8.69×10^{25}
Neptune	Sun	4504300	24764	1.02×10^{26}
Earth	Sun	149600	6378	5.98×10^{24}
Venus	Sun	108200	6052	4.87×10^{24}
Mars	Sun	227940	3398	6.42×10^{23}
Ganymede	Jupiter	1070	2631	1.48×10^{23}
Titan	Saturn	1222	2575	1.35×10^{23}
Mercury	Sun	57910	2439	3.30×10^{23}
Callisto	Jupiter	1883	2400	1.08×10^{23}
Io	Jupiter	422	1815	8.93×10^{22}
Moon	Earth	384	1738	7.35×10^{22}
Europa	Jupiter	671	1569	4.80×10^{22}
Triton	Neptune	355	1353	2.14×10^{22}
Pluto	Sun	5913520	1160	1.32×10^{22}