



AP Environmental Science is a rigorous course that will be taught at a level comparable to a college course. You will find that this course is interdisciplinary, combining area of chemistry, biology, geology, math, economics and politics. In this course, science is applied to understanding the interrelationships found in nature and analyzing environmental problems, both natural and human-made. In addition to lectures, we will be taking a very hand-on approach to the subject by doing many labs and activities and making connections to current events with articles, videos and TED talks. It is my desire that the knowledge gained in this course will remain with each student and guide your decision-making processes as citizens of this place we call Earth.

The summer assignment is to help prepare you both academically and mentally for the material, expectations, and pace of the course. Just as throughout the year you will need to be responsible for pacing yourself through ongoing assignments (readings, homework, etc), the same is expected of you in this summer assignment. The assignment is split into three separate components, each of which is outlined on the following pages. All work for part IA (see below) should be compiled into **one** electronic file, double spaced, to be submitted on Canvas by **Friday, 9/6/19**, with the exception of the math work, which should be handwritten on a separate sheet of paper.

Summer Assignment is worth 60 points:

Part I = 40 points

Part II = 20 points

PART I. GLOBAL ENVIRONMENTAL AWARENESS: Looking beyond our own backyard, it is important to understand environmental concerns from around the world.

- A. Choose a book from the list at the bottom of this document and then respond to the following prompts (30 points):
 - i. Write a short synopsis of the book – 1 page
 - ii. List 5 questions you have from the reading.
 - iii. Discuss your opinion of the book, referencing items in the book to support your thoughts – 1 page
 - iv. Discuss how topics raised in the book may impact your personal life – 1 page
- B. Present. Condense the take home message of the book into a 2-Slide presentation (10 points):
 - i. One slide should summarize the book
 - ii. One slide should focus on a major theme to teach/discuss with your classmates.

PART II. PREPARING FOR CLASS

- A. Math: The APES Exam (and this class) will require you to do math – without a calculator! To earn credit on free-response questions, you **must** show all calculations clearly and in an organized manner (excluding unit conversions). To practice and review the essential skills, complete all of the problems below on a separate piece of paper. There will be a math quiz the first week of school. (20 points)
- B. Background and Review: Read Chapters 1 and 2 of your textbook so we can hit the ground running. Write down any questions that you have from these chapters so we can discuss them within the first cycle of class meetings.

APES Math Review

All work must be done **without the use of a calculator**. Complete the following sections of math review on a separate sheet of paper. All work needs to be included (where appropriate).

1. Put the following numbers into scientific notation.

- A. $0.003 =$ _____
- B. $1,530,000 =$ _____
- C. $0.00005 =$ _____
- D. $142 =$ _____
- E. $2020 =$ _____

2. Write the following numbers in standard notation (convert from scientific)

- A. $1 \times 10^6 =$ _____
- B. $3.5 \times 10^2 =$ _____
- C. $5.1 \times 10^{-3} =$ _____
- D. $1.2 \times 10^{-6} =$ _____
- E. $4 \times 10^{-10} =$ _____

3. Solve the following

- A. $10^3 \times 10^4 =$ _____
- B. $10^3 \times 10^{-4} =$ _____
- C. $10^{-1} \times 10^5 =$ _____
- D. $10^{-4} \times 10^{-2} =$ _____
- E. $10^{-2} \times 10^{-2} =$ _____
- F. $10^3 / 10^4 =$ _____
- G. $10^2 / 10^1 =$ _____
- H. $10^3 / 10^{-4} =$ _____
- I. $10^{-4} / 10^{-2} =$ _____
- J. $10^{-3} / 10^{-5} =$ _____

4. Solve the following using scientific notation

- A. $0.003 \times 0.0005 =$ _____
- B. $0.015 \times 0.02 =$ _____
- C. $0.000005 \times 0.000006 =$ _____
- D. $15,000 \times 100 =$ _____
- E. $125 \times 1,000,000 =$ _____
- F. $150,000,000 \times 0.00005 =$ _____
- G. $0.0003 \times 1,000 =$ _____
- H. $1,000 / 130,000 =$ _____
- I. $15 / 0.00015 =$ _____
- J. $150 / 1,000,000 =$ _____

5. Percentages

- A. What is 15% of 1,500?
- B. You start with 100 units and end with 150 units, what is the percentage increase?
- C. You start with 100 units and end with 50 units, what is the percentage decrease?
- D. You start with 200 units. How many units would you have after a 75% decrease?
- E. You use 1,000 kilowatts of power. You increase your usage by 30%. How many total kilowatts are you using?
- F. Your old microwave used 2 kilowatts an hour. Your new microwave uses 1.5 kilowatts an hour. What is your percent energy savings?
- G. A light bulb uses 100 watts of power. 95 watts are wasted as heat. What percentage of energy is used to light the bulb?
- H. A fluorescent bulb uses 22 watts and gives off the same amount of light as a 100 watt regular bulb. What is the percentage in energy savings by switching to a fluorescent bulb?
- I. A population starts the year with 1,000 residents. By the end of the year, 100 new babies were born. What is the percent increase for this population?
- J. You dissolve 5 grams of salt into 95 grams of water. What is your percent salt solution?

6. Dimensional Analysis : Set up and solve the following equations using all units and showing all work. Conversion factors are included. Use scientific notation when appropriate.

- A. There are 2.2 pounds in 1 kilogram. How many pounds in 120 kilograms?
- B. There are 2.53 centimeters in one inch. How many centimeters are in 24 inches?
- C. There are 36 inches in one yard, how many centimeters are in one yard?
- D. There are 100 centimeters in 1 meter. How many yards are in one meter?
- E. Given 1000 watts in 1 kilowatt, how many watts are in 2.3 kilowatts?
- F. 1 megawatt is 10^6 watts. How many kilowatts are there in one megawatt?
- G. There are 1,000 grams in one kilogram, and 1,000 micrograms in one gram. How many micrograms are in 2,500 kilograms?
- H. You have 24 lightbulbs. Each uses 100 watts an hour. How many watts are used in 120 hours?
- I. 1,000 homes are in a city. Each home uses 200 kilowatt hours a month. How many kilowatt hours does the entire city use in a month?

Global Environmental Awareness Book Choices

Title	Author	Year
<i>Omnivore's Dilemma</i>	Michael Pollan	2007
<i>In Defense of Food: An Eater's Manifesto</i>	Michael Pollan	2008
<i>Hot, Flat, and Crowded: Why We Need a Green Revolution – and How It Can Renew America</i>	Thomas L. Friedman	2009
<i>The Weather Makers: How Man is Changing the Climate and What It Means For Life on Earth</i>	Tim Flannery	2003
<i>The World Without Us</i>	Alan Weisman	2007
<i>Pandora's Seed: The Unforeseen Cost of Civilization</i>	Spencer Wells	2010
<i>Plan B 2.0: Rescuing a Planet Under Stress and a Civilization in Trouble</i>	Lester Russell Brown	2006
<i>Plan B. 4.0: Mobilizing to Save Civilization</i>	Lester Russell Brown	2008
<i>The Sixth Extinction</i>	Elizabeth Kolbert	2014
<i>Tipping Point for Planet Earth</i>	Barnosky & Hadly	2015
<i>Junkyard Planet: Travels in the Billion Dollar Trash Trade</i>	Adam Minter	2013
<i>The Big Thirst: The Marvels, Mysteries, and Madness Shaping the New Era of Water</i>	Charles Fishman	2011
<i>Cradle-To-Cradle: Remaking the Way We Make Things</i>	William McDonough, Michael Braungart	2002
<i>Cheap: The High Cost of Discount Culture</i>	Ellen Ruppel Shell	2009
<i>Water Wars: Drought, Flood, and the Politics of Thirst</i>	Diane Raines Ward	2002
<i>Blue Gold: The Fight to Stop the Corporate Theft of the World's Water</i>	Maude Barlow, Tony Clarke	2005
<i>Coal River</i>	Michael Shnayerson	2008
<i>Green Illusions: The Dirty Secrets of Clean Energy and the Future of Environmentalism</i>	Ozzie Zehner	2012