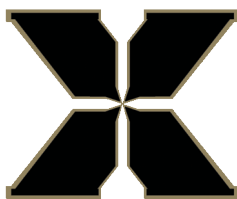


A.M.D.G.



## AP Environmental Science

Mr. Dave Branconier  
dbranconier@xavierprep.org

*"The best time to plant a tree was twenty years ago. The next best time is today."*

Chinese proverb

WELCOME TO ADVANCED PLACEMENT ENVIRONMENTAL SCIENCE aka APES. In order to be prepared to jump right in at the beginning of the school year, there are three required assignments that must be completed by our first class meeting in August. They are each described below and I would recommend doing assignment #1 closer to the beginning of the school year.

Please understand that this course will require a lot of time and effort to be successful. The pace and workload are designed to acquire a thorough understanding of the content and be as prepared as possible for the AP exam in May. Expect homework to be assigned on weekends and during all of our breaks including Thanksgiving break, Christmas break, Winter break, and Spring Break. The work will be manageable and given well before the breaks so ample time will be given to finish the assignments. Please understand this is the best way to ensure that we get to all required course topics covered in preparation for the AP exam in May. This course is often describes as, "A mile wide and an inch deep." Meaning we will talk about many, many things to varying depths.

Prerequisite: The minimum grade of 'B' in Biology, Chemistry and Geometry, and department recommendation.

I look forward to having all of you in class and having a very positive year. If you have any questions please feel free to email me at [dbranconier@xavierprep.org](mailto:dbranconier@xavierprep.org)

Enjoy your summer and I'll see you in August.

Mr. Branconier



# INTRODUCTION

## THROUGH WHICH LENSES?

This course is an interdisciplinary study and experience of the natural world and man's place in it. This course specifically looks at the mechanics of the various physical, chemical and biological systems of earth and how these dynamics effect the environment and affect human response. These concepts will be considered through three main perspectives.

- The first lens - With earth as a unique, individual and advanced organism unto itself; how, when unmolested, its systems are efficiently and perfectly balanced to maintain and propagate life, evolve and manage change.
- The second lens - Inserts humans into the natural economy beyond being simply an additional species but as a species quite capable of changing the earth's natural carrying capacity to an unnatural one and the positive and negative effects of this manipulation. Through this second lens the course allows for investigation and conversations beyond the empirical science and into the areas of culture, politics, history, sociology, technology, economics and justice. Here the course reinforces the relevance of these studies and the course in general.
- The third lens - is informed by the first two and looks at current situations and projections into the future. You will study and design models to project current statuses into the near and distant future. You will study current solutions and proposals from technical, empirical, cultural, civic and economical viewpoints. You will develop skills in forming, supporting, arguing, refining and defending a position including cost/benefit data and justification.

You will finish this course with a more developed and informed intellect and conscience in regards to human influence in the natural world and social realms and be familiar with multiple courses of action to respond.



# SUMMER FUN

**ASSIGNMENT #1 – Study Guides:** Complete the study guides below for Chapters 1 and 2 of the textbook. There is no minimum or maximum length of answer but make sure your responses are complete, clear, concise and in printed form, double sided using APA Format. You will need to check out the textbook **The Environment and You** Christensen/ Leege, 2016 from Mrs. Gitmed in the Business Office.

## **Chapter 1 – Study Guide – Environment, Sustainability, and Science (pgs. 2-28 textbook)**

Directions - Expound on the following Key Concepts:

- Environmental Science and ecology explore the interactions of humans with nature.
- The chain of events on Rapa Nui (Easter Island).
- The tragedy of the commons.
- Our understanding of sustainable behavior has changed through time.
- Triple Bottom Line in your own words.
- Describe specific, current examples of environmental degradation in the world.
- The ecosystem concept combines living organisms and their environment.
- What is the difference between ecology and environmental science?
- Ecosystems provides the resources and processes upon which humans depend.
- Ecosystems processes are regulated by interactions among biotic and abiotic components.
- The four fundamental principles of ecosystems.
- Science asks questions in a fair and unbiased fashion.
- The seven themes in the development of sustainability science. (One sentence each.)
- Describe 5 key environmental concerns in today's world and why.

Directions - Define the Key Terms:

<ul style="list-style-type: none"> <li>• environment</li> <li>• environmental science</li> <li>• anthropogenic</li> <li>• ecology</li> <li>• human well-being</li> <li>• sustainability</li> <li>• TBL, triple bottom line</li> <li>• ecosystem</li> <li>• biota</li> <li>• abiotic</li> <li>• bias</li> <li>• sustainability science</li> </ul>	<ul style="list-style-type: none"> <li>• tragedy of the commons</li> <li>• dynamic homeostasis</li> <li>• feedback loops                             <ul style="list-style-type: none"> <li>○ negative</li> <li>○ positive</li> </ul> </li> <li>• sustainable action</li> <li>• nonrenewable resources</li> <li>• renewable resources</li> <li>• biomimicry</li> <li>• science</li> <li>• hypothesis</li> <li>• treatment group</li> </ul>	<ul style="list-style-type: none"> <li>• control group</li> <li>• ecosystem                             <ul style="list-style-type: none"> <li>○ functions</li> <li>○ integrity</li> <li>○ services                                     <ul style="list-style-type: none"> <li>✓ provisioning</li> <li>✓ regulating</li> <li>✓ cultural</li> <li>✓ supporting</li> </ul> </li> </ul> </li> <li>• variables                             <ul style="list-style-type: none"> <li>○ independent</li> <li>○ dependent</li> </ul> </li> </ul>
--	--	---

## Chapter 2 – Environmental Ethics, Economics and Policy (pgs. 30 – 61 textbook)

### Directions - Expound on the following Key Concepts:

- Logging in national forests is very controversial. Describe how preservationist and conservationist views on this issue would likely differ.
- A community wishes to build a new elementary school to meet the needs of its growing population. The most convenient site for this new school happens to be one of the few remaining tracts of forest within the city. On what criteria would virtue ethicists, consequence-based ethicists, and duty-based ethicists decide whether or not cutting this forest to locate the school was right?
- In very dry years or when winters are very cold, the food supply for elk in the Yellowstone wilderness may be limited and weak or old animals are likely to die. Some argue that park managers should provide supplemental feeding stations to prevent such deaths. What is your view on this matter, and on what ethical framework would you base it?
- Describe two examples of actions that countries might take that increase their GDP while diminishing their GPI. Give an example of actions that would likely increase both GDP and GPI.
- How have the attitudes of individual countries regarding environmental policies been influenced by their status with respect to development or wealth?

### Directions - Define the Key Terms:

<ul style="list-style-type: none"><li>• Animism</li><li>• Virtue ethics</li><li>• Consequence-based ethics</li><li>• Utilitarianism</li><li>• Duty-based ethics</li><li>• intrinsic value</li><li>• Instrumental value</li><li>• ecofeminism</li><li>• Environmental justice</li><li>• Economic system<ul style="list-style-type: none"><li>◦ Subsistence economy</li><li>◦ Market economies</li><li>◦ Free market</li><li>◦ Planned economy</li></ul></li><li>• Commodities</li><li>• Profit</li><li>• Economic value</li><li>• Opportunity cost</li><li>• Eternalized costs &amp; benefits</li><li>• Unknown costs &amp; benefits</li></ul>	<ul style="list-style-type: none"><li>• Limited resources</li><li>• marginal value</li><li>• contingent evaluation</li><li>• natural capital</li><li>• ecological valuation</li><li>• gross domestic product (GDP)</li><li>• genuine progress indicator (GPI)</li><li>• policy cycle</li><li>• regulatory mandates</li><li>• incentives</li><li>• market-based policies</li><li>• case law</li><li>• sovereignty</li><li>• conventional international laws</li><li>• judicial international laws</li><li>• anthropocentric ethics</li><li>• biocentric ethics</li><li>• ecocentric ethics</li><li>• deep ecology</li></ul>
---	--

## ASSIGNMENT #2 – ScrAPESbook Journal

You will be assembling a ScrAPES book (see what I did there) that will reflect the themes we will be visiting throughout the year. You may be adding to your ScrAPES book throughout the year and will get started with the summer assignment below. Be creative, ask grandma for help. I offer you the following reference though there are many out there.

<https://www.craftsy.com/blog/2015/03/scrapbooking-ideas-for-beginners/>

The more reused or recycled materials you use in the construction the higher the point value. Do not use store bought, pre-made books.

Your assignment → Below is the APES course outline of topics. For each of the 7 major categories (Roman numerals) you will take one original photo. Each photo should illustrate the concept and its relevance to the broader environmental science conversation. For each of the 7 concepts construct one ScrAPES book page with the photo 4" X 6" with a brief and concise description that includes why you think this image is relevant to the environmental science discussion. Also, in the spirit of St. Ignatius' idea of "Finding God in all things" describe how you feel God is present or not present in your photo subject.

Devise a way for me to tell that these are your own personal and original photos. Decide on one item that is included in every photo such as your favorite stuffed animal, something natural like a rock, feather, dead fish, etc. or you - as long as it is the same item in all 7 photos.

Note: Make sure you construct your book so you can add additional pages throughout the year or include about 5 extra pages in your initial construction. Also design and include a creative cover page for the book.

### Course Topics:

- I. Earth Systems and Resources
  - A. Earth Science Concepts
  - B. The Atmosphere
  - C. Global Water Resources and Use
  - D. Soil and Soil Dynamics
- II. The Living World
  - A. Ecosystem Structure and energy flow
  - B. Ecosystem Diversity
  - C. Natural Biogeochemical Cycles
- III. Population
  - A. Population Biology Concepts
  - B. Human Population
- IV. Land and Water Use
  - A. Agriculture/Forestry
  - B. Rangelands
  - C. Mining
  - D. Fishing
  - E. Global Economics

- V. Energy Resources and Consumption
  - A. Energy Consumption
  - B. Fossil Fuel Resources and Use
  - C. Nuclear Energy
  - D. Hydroelectric Power
  - E. Energy Conservation
  - F. Renewable Energy
- VI. Pollution
  - A. Pollution Types
  - B. Impacts on the Environment and Human Health
- VII. Economic Impacts Global Change
  - A. Stratospheric Ozone
  - B. Global Warming
  - C. Loss of Biodiversity

**ASSIGNMENT #3 - Go Outside!!** - Camp outside on any 2 nights this summer. The two nights do not need to be consecutive, but they can be. You may find yourself in the backwoods of the Sierra, the shore of the Amazon, or your own back yard on the pool chaise lounge. The idea is to be outside. (Sleeping in the casita with the doors open is not camping.) I invite you to be adventurous, go with other APES classmates, and get out of your comfort zone. If you need any suggestions on where to camp, what to pack, what to eat, just let me know and I would be glad to advise.

The purpose for this activity is to be outside. Here at Xavier we often speak of things out there that are bigger than yourself. Nature is just that. Our culture often wants to put faith and science against each other. Spend the night outside and experience how faith and nature emanate from the very same Source. In your ScrAPES Book include a page for each of your nights outside. Each page should have a picture from each night and a short reflection on your experience for that night whether it was a positive or negative experience or a mixture of both. Describe how God was present (or not) during the night.

**Assignment Recap:**

- Assignment #1 - Using the textbook expound on the key concepts and define the key terms. Be ready to discuss when we start class.
- Assignment #2 - Construction of a ScrAPES Book. This will be composed of:
  - 1 Title page
  - 7 major category pages - Why relevant? / Where is God?
  - 2 camping pages - Reflections
  - Design so additional pages can be added if needed throughout the year.
- Assignment #3 - Camp outside and play!

REMINDER: These assignments are due at the beginning of our first full class session, Wednesday August 14, 2019. Electronic versions will not be accepted. **Go Saints!! Go APES!!**