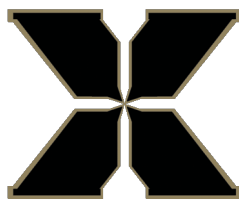


A.M.D.G.



## AP Environmental Science

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2022 - 2023

*"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!

I am glad to have you a part of this class. Please understand that this course will require a lot of time and effort to be successful. The pace and workload are designed for you to acquire a thorough understanding of the content and be as prepared as possible for the AP exam in May. Expect work 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 allotted to complete 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 described as, "A mile wide and an inch deep." Meaning we will talk about many, many things to varying depths.

Prerequisite: Junior or Senior standing; the minimum grade of 'B' in CP Biology, CP Chemistry, and CP Geometry or of "C" in Honors Biology, Honors Chemistry, and Honors Geometry, and departmental 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)

Following is some background info on the course and the summer assignment.

Have fun with it!

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 state and carrying capacity to unnatural ones and the positive and negative effects of these manipulations. 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.



## COURSE TOPIC OUTLINE

## **BIG IDEAS:**

### **1: ENERGY TRANSFER**

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 becomes unusable.

### **2: INTERACTIONS BETWEEN EARTH SYSTEMS**

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**

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**

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, social, and economic factors is vital to the development of solutions.

## **UNITS:**

Unit 1 - THE LIVING WORLD: ECOSYSTEMS: The first unit sets the foundation for the course by examining the Earth as a system with interdependent components, processes, and relationships. Students will examine the distribution of resources in ecosystems and its influences on species interactions.

Unit 2 - THE LIVING WORLD: BIODIVERSITY: Biodiversity, which includes genetic, species, and habitat diversity, is critically important to ecosystems. Biodiversity in ecosystems is a key component to sustaining life within the living world.

Unit 3 - POPULATIONS: Populations within ecosystems change over time in response to a variety of factors.

Unit 4 - EARTH SYSTEMS AND RESOURCES: This unit explores earth systems within the atmosphere, geosphere and hydrosphere and the associated resources that support life.

Unit 5 - LAND AND WATER USE: This unit explores human activities that disrupt ecosystems both positively and negatively and the methods employed to reduce impact.

Unit 6 - ENERGY RESOURCES AND CONSUMPTION: This unit examines human use of renewable and nonrenewable sources of energy and its impact on the environment

Unit 7 - ATMOSPHERIC POLLUTION: Air pollution has many sources and effects, both indoors and outdoors. Air is a natural resource that covers the Earth and crosses many system boundaries. Human activities affect the quality of the air both indoors and outdoors.

Unit 8 - AQUATIC AND TERRESTRIAL POLLUTION: Pollution created by human activities directly impacts ecosystems in the air, on land, and in water. T

Unit 9 - GLOBAL CHANGE: A central aspect of environmental science is to understand the global impact of local and regional human activities.

## SUMMER FUN

### **ASSIGNMENT #1 - 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/>

Reuse and recycle materials for the construction of your book. 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 → For each of the 9 unit areas, described above, 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 9 concepts construct one 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, new 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 9 photos.

Note: Make sure you construct your book so you can add additional pages throughout the year or include about 10 extra pages in your initial construction. Also design and include a creative cover page for the book.

### **ASSIGNMENT #2 – 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. The idea is to be outside. (Sleeping in the casita with the doors open is not camping outside.) 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.

Due Dates: Submit photos of three of your scrAPES book pages (any pages), via email, by June 30, 2022. Submit photos of 3 additional pages (any other 3) by July 8, 2022. Your complete scrAPES book, in physical form, is due at the beginning of our first full class session, at the beginning of the 2022-2023 school year. Electronic versions will not be accepted.

Zoom Meeting: Wednesday, July 13 from 12 pm to 1:00 pm. This is to check in and answer any questions you may have about the summer assignment or the APES course in general.

**\*\*If you have any questions in the meantime, just email me. If you'd like to set up a zoom meeting at any time just let me know.\*\***

Email me your work and any questions: [dbranconier@xavierprep.org](mailto:dbranconier@xavierprep.org)

**Go Saints!!**

**Go APES!!**