

Advanced Placement Environmental Science Course Syllabus

Lemon Bay High School

Andrea Green

2021-2022

Room 02-111

Textbook: *Environment: The Science Behind the Stories* by Jay Withgott and Matthew Laposata

Course Description

The goal of the AP Environmental Science course is to provide students with the scientific principles, concepts, and methodologies required to understand the inter-relationships of the natural world, to identify and analyze environmental problems both natural and human-made, to evaluate the relative risks associated with these problems, and to examine alternative solutions for resolving and preventing them.

Environmental science is interdisciplinary; it embraces a wide variety of topics from different areas of study. There are several unifying themes included in the study of environmental science. This course is organized into 9 units; each unit is further broken down into a series of topics. Please see the last page of this syllabus for a detailed list of unit titles and topics.

****The AP Environmental Science EXAM will be administered Tuesday, May 3, 2022 at 8:00 a.m.****

How will grades be earned?

- Activities 30%
 - Classwork (Activities, Lab, & Projects) and Homework
- Assessment 70%
 - Quizzes and Tests (M/C and FRQ)

What supplies will be needed?

- 1" or 1.5" Three Ring Binder
- Pencils
- Colored Pencils & Sharpener
- Calculator
- Earbuds or Headphones Compatible with School Issued Chromebook

Class Environment & Expectations

- Our classroom will be a MUTUALLY RESPECTFUL ENVIRONMENT.
- Attendance is IMPORTANT! In order to be a successful learner, your presence in class is essential.
- Arrive on time.
- Maintain appropriate social distancing when possible.
- Face coverings/masks are highly recommended.
- Backpacks and electronic devices stowed away in designated area.
- 20/10 Rule in effect.
- Remain seated until dismissed.

Course Instructional Format

We will be using a combination of in person direct instruction and virtual instruction. Instruction will be organized in and facilitated through Google Classroom. We will be using AP Classroom (<https://myap.collegeboard.org/login>), Edpuzzle Website (<https://edpuzzle.com/home>), Pearson Textbook Mastering Environmental Science Website (<https://www.pearsonmylabandmastering.com/northamerica/masteringenvironmentalscience/>), and Explore Learning Gizmo online simulations (<https://www.explorelearning.com/>).

Course Communication Format

As we work through this school year, open lines of communication will be imperative. Remind will be the primary means of communication between home and school for BOTH students and parents. Instructions for joining our Remind group are in the table below.

AP Environmental Class Period	Remind Join Option Instructions
Period	Text @f92kg42bk9 to 81010 for text notifications, OR Open smartphone web browser, go to rmd.at/f92kg42bk9 to download mobile app on your device.

Saturday Laboratory Sessions

There are 4 high level, inquiry based labs that support and reinforce curriculum for this course. Due to the nature of these labs, completion requires significantly more time than the 50 minute class periods. In order to complete these activities, please plan to attend the following Saturday Laboratory Sessions throughout the school year. In addition, there will be two opportunities to complete an AP Environmental Science MOCK Exam. Those dates are listed below as well.

- Northwest vs. Southeast Owl Pellet Comparison Lab: August 28, 2021
- Cemetery (Human Population Dynamics) Lab: October 9, 2021
- Soil Properties Lab: November 6, 2021
- Acid Deposition Lab: February 12, 2022
- APES Mock/Practice Exam 1: April 9, 2022
- APES Mock/Practice Exam 2: April 23, 2022

AP Environmental Science Course Framework

Unit 1: The Living World: Ecosystems

- 1.1 – Introduction to Ecosystems
- 1.2 – Terrestrial Biomes
- 1.3 – Aquatic Biomes
- 1.4 – The Carbon Cycle
- 1.5 – The Nitrogen Cycle
- 1.6 – The Phosphorus Cycle
- 1.7 – The Hydrologic (Water) Cycle
- 1.8 – Primary Productivity
- 1.9 – Trophic Levels
- 1.10 – Energy Flow and the 10% Rule
- 1.11 – Food Chains and Food Webs

Unit 2: The Living World: Biodiversity

- 2.1 – Introduction to Biodiversity
- 2.2 – Ecosystems Services
- 2.3 – Island Biogeography
- 2.4 – Ecological Tolerance
- 2.5 – Natural Disruptions to Ecosystems
- 2.6 – Adaptations
- 2.7 – Ecological Succession

Unit 3: Populations

- 3.1 – Generalist and Specialist Species
- 3.2 – K-Selected r-Selected Species
- 3.3 – Survivorship Curves
- 3.4 – Carrying Capacity
- 3.5 – Population Growth and Resource Availability
- 3.6 – Age Structure Diagrams
- 3.7 – Total Fertility Rate
- 3.8 – Human Population Dynamics
- 3.9 – Demographic Transition

Unit 4: Earth Systems and Resources

- 4.1 – Plate Tectonics
- 4.2 – Soil Formation and Erosion
- 4.3 – Soil Composition and Properties
- 4.4 – Earth’s Atmosphere
- 4.5 – Global Wind Patterns
- 4.6 – Watersheds
- 4.7 – Solar Radiation and Earth’s Seasons
- 4.8 – Earth’s Geography and Climate
- 4.9 – El Niño and La El Niña

Unit 5: Land and Water Use

- 5.1 – The Tragedy of the Commons
- 5.2 – Clearcutting
- 5.3 – The Green Revolution
- 5.4 – Impacts of Agricultural Practices
- 5.5 – Irrigation Methods
- 5.6 – Pest Control Methods
- 5.7 – Meat Production Methods
- 5.8 – Impacts of Overfishing
- 5.9 – Impacts of Mining
- 5.10 – Impacts of Urbanization
- 5.11 – Ecological Footprints
- 5.12 – Introduction to Sustainability
- 5.13 – Methods to Reduce Urban Runoff

- 5.14 – Integrated Pest Management
- 5.15 – Sustainable Agriculture
- 5.16 – Aquaculture
- 5.17 – Sustainable Forestry

Unit 6: Energy Resources and Consumption

- 6.1 – Renewable and Nonrenewable Resources
- 6.2 – Global Energy Consumption
- 6.3 – Fuel Types and Uses
- 6.4 – Distribution of Natural Energy Resources
- 6.5 – Fossil Fuels
- 6.6 – Nuclear Power
- 6.7 – Energy from Biomass
- 6.8 – Solar Energy
- 6.9 – Hydroelectric Power
- 6.10 – Geothermal Energy
- 6.11 – Hydrogen Fuel Cell
- 6.12 – Wind Energy
- 6.13 – Energy Conservation

Unit 7: Atmospheric Pollution

- 7.1 – Introduction to Air Pollution
- 7.2 – Photochemical Smog
- 7.3 – Thermal Inversion
- 7.4 – Atmospheric CO₂ and Particulates
- 7.5 – Indoor Air Pollutants
- 7.6 – Reduction of Air Pollutants
- 7.7 – Acid Rain
- 7.8 – Noise Pollution

Unit 8: Aquatic and Terrestrial Pollution

- 8.1 – Sources of Pollution
- 8.2 – Human Impacts on Ecosystems
- 8.3 – Endocrine Disruptors
- 8.4 – Human Impacts on Wetlands and Mangroves
- 8.5 – Eutrophication
- 8.6 – Thermal Pollution
- 8.7 – Persistent Organic Pollutants (POP’s)
- 8.8 – Bioaccumulation and Biomagnification
- 8.9 – Solid Waste Disposal
- 8.10 – Waste Reduction Methods
- 8.11 – Sewage Treatment
- 8.12 – Lethal Dose 50% (LD₅₀)
- 8.13 – Dose Response Curve
- 8.14 – Pollution and Human Health
- 8.15 – Pathogens and Infectious Diseases

Unit 9: Global Change

- 9.1 – Stratospheric Ozone Depletion
- 9.2 – Reducing Ozone Depletion
- 9.3 – The Greenhouse Effect
- 9.4 – Increases in Greenhouse Gases
- 9.5 – Global Climate Change
- 9.6 – Ocean Warming
- 9.7 – Ocean Acidification
- 9.8 – Invasive Species
- 9.9 – Endangered Species
- 9.10 – Human Impacts on Biodiversity