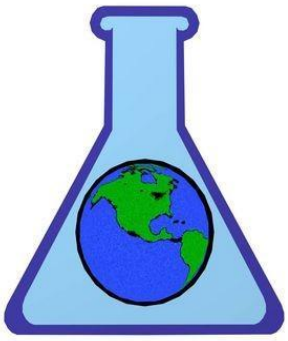
AP Environmental Science
2018-2019
Course Expectations and Syllabus



Instructor: Jack McLeod – Room 501
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Phone: 425-385-6151
Office Hrs: 7-7:25am and 2:05-2:30pm, variable each day
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Textbook: Living in the Environment: Principles, Connections, and Solutions 17th Edition, G. Tyler Miller Jr. & Scott E. Spoolman, Copyright 2009, 2012 Brooks/Cole

Environmental Science Overview

AP® Environmental Science differs significantly from the usual high school course with respect to the kind of textbook used, range and depth of topics covered, the kind of laboratory work done, and the time and effort required of students. The six themes, which provide a foundation for the structure of the AP® Environmental Science **(APES)** course are:

1) **Science is a process as well as a body of knowledge**.
   - Science is a method of learning more about the world.
   - Using science can change the way we understand and affect the world.
2) **Energy conservation underlies all ecological processes**.
   - Energy cannot be created; it cycles through systems.
   - As energy flows through systems, at each step more of it becomes unusable
3) **The Earth itself is one interconnected system**.
   - Natural systems change over time and space.
   - Biogeochemical systems vary in ability to recover from disturbances.
4) **Humans alter natural systems**.
   - Humans 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.
5) **Environmental problems have a cultural and social context.**
   - Understanding the role of cultural, social, and economic factors is vital to the development of solutions.
6) **Human survival depends on developing practices and perhaps technology that will result in sustainable systems.**
   - A suitable combination of conservation and development is required.
   - Management of common resources is essential.

Goals for the Class:

1) Learn the constituents of our environment and the role of humanity in its changes.
2) Prepare students for the AP Exam in May.
3) Help prepare students for college.

Class Materials: Each student will be required to keep a notebook, three-ring binder with pockets is preferable, as well as a lab book/journal. ***No calculators can be used on any assignments for the class since calculators are not allowed on the AP Exam in May.***

Assignment Due Dates: All assignments are due on the date communicated by the instructor. If printed, the student is responsible to print their assignment before class starts. ***Late Assignments are not accepted***. Turning things in late is not a life skill. It will not help you succeed in college or career. If there are circumstances beyond your control let me know prior to the due date. This is on an individual case by case basis.

Chapter Assignments: For each chapter, students will be required to read the textbook and answer the questions associated with that chapter.

Chapter Vocabulary: Students will learn approximately 700 vocabulary words related to Environmental Science. Vocabulary is very important to fully understand science. ***Students are encouraged to make their own flash cards or a vocabulary dictionary.***

Quizzes: There will be quizzes on a regular basis. The quizzes will focus on vocabulary, chapter readings, lectures and activities for the week. These will take approximately 10-15 minutes of class.

Unit Exams: Each unit will be comprised of several chapters from the texts. Exams are a combination of multiple choice questions and one extended response/essay. As this is a college level class, additional time is not provided on exams. You must finish in the time provided.

Labs / Activities: There will be many activities for each unit, see the chapter assignments for an approximate listing of these assignments. Some activities will be relatively short, while others will last for many weeks. Each activity has different point values based on the length and complexity of the activity.

Current Events: You will be required to keep a Current Event Notebook. The Current Event must be related to environmental science. You will be given separate instructions for this.

Service Learning project: In a service-learning project, you and your team will apply what you learn in this course by planning and carrying out a project to positively impact the community. The project may be direct (hands-on), indirect (providing a benefit without direct contact), or advocacy (educating others to enact change). The project will have both a local/national and a global impact. Students who meet the project requirements and take the AP Exam can earn a service program recognition that will be communicated to colleges and universities on ETS Score Reports.

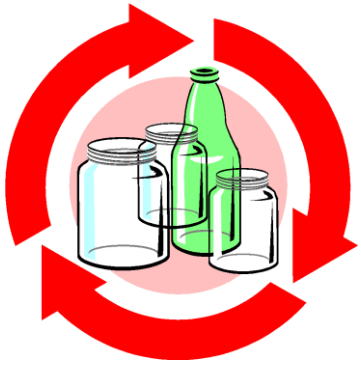
Grading: Students will be evaluated through performance on chapter exams, announced quizzes on the readings, laboratory investigations and lab reports, homework, group projects, and writing assignments. In addition, each student will conduct an environmental science research project.

Grades are calculated using the following:

- 50 % - Assessments - 50 % (M/C Tests)
- 30 % - Free Response Questions (Essay Questions)
- 20 % - Practice Work (Preparation, Participation)

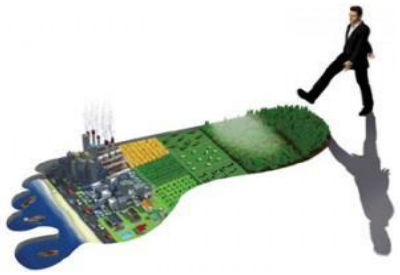
Letter grades will be determined by:

- A = 100-90
- B = 89-80
- C = 79-70
- D = 69-60
- F < 60



Course Outline

Subject to change if necessary



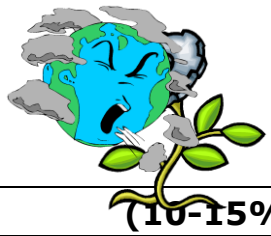
1st Semester

Introduction to A.P. Environmental Science – 3 weeks			
Topic	**Chapters**	**Activities/Labs/Videos**	**Projects**
Environmental Problems: Causes and Sustainability	1	-Ecological Footprint Activity -Ranking Environmental Challenges Activity -The Lorax Video -Guns, Germs & Steel Video	
Science, Matter, Energy, and Systems	2	-Salinization Lab	

Unit 1: Earth Systems and Resources – 5 weeks			(10-15%)
Topic	**Chapters**	**Activities/Labs/Videos**	**Projects**
Climate and Biodiversity	7	-Climatograms Activity -What's Up with the Weather Video	-Biomes
Food, Soil, and Pest Management	12	-Does Land Use Affect Soil Texture and Permeability Lab	
Water Resources	13	-Personal Water Usage Activity -Three Gorges Dam Video -Cadillac Dessert Video	-Damning of the Columbia River
Geology & Nonrenewable Mineral resources	14	-Earthquakes and Volcanoes Activity -Physical & Chemical Weathering Lab -Cookie Mining Lab	

Unit 2: The Living World – 3 weeks			(10-15%)
Topic	**Chapters**	**Activities/Labs/Videos**	**Projects**
Ecosystems: What are they and how do they work?	3	-Food Web Activity -Biomagnification Through a Food Chain Lab -Owl Pellet Lab -Estimating Carrying Capacity Activity	-Biogeochemical Cycles
Biodiversity: Evolution, Species Interactions Population Control Aquatic	4,5,8	-Biodiversity with Cars Lab -Forest Plot Analysis Lab -Aleopathy Lab -Predator/Prey Activity -Life in a Watershed Activity	

Unit 3: Population – 3.5 weeks			(10-15%)
Topic	**Chapters**	**Activities/Labs/Videos**	**Projects**
The Human Population and Its Impact	6	-The Power of the Pyramid Activity -Rule of 70 doubling time Activity -Population Growth Lab -The Wealth Gap Activity -The World in Balance Activity -Human Populations Video -Home Video	-Ecological Footprint Calculations & Comparison -Age Structure Histograms
Sustaining Biodiversity: The Species Approach	9	-Invasive Species Activity -Cane Toads Video	-Endangered Species



Unit 4: Land and Water Use – 3 weeks			(10-15%)
Topic	**Chapters**	**Activities/Labs/Videos**	**Projects**
Sustaining Terrestrial Biodiversity: The Ecosystems Approach	10	-National Parks Activity	
Food, Soil, & Pest Managements	12	-Irradiated Seeds Lab -Food, Inc. Video -Harvest of Fear Video	Genetically Modified Organisms

2nd Semester

Unit 5: Energy Resources and Consumption – 4 weeks			(10-15%)
Topic	**Chapters**	**Activities/Labs/Videos**	**Projects**
Nonrenewable Energy	15	-Efficiency of a Coal Plant Lab -Personal Energy Audit Activity -Japan's Nuclear Disaster Video	NR: Advantages/ Disadvantages Poster
Energy Efficiency and Renewable Energy	16	-Who Killed the Electric Car Video -Power Surge Video -Wind Turbines Activity -Designing an Efficient Home -Home Energy Audit & Possible Improvements	R: Advantages/ Disadvantages Poster

Unit 6: Pollution – 6 weeks			(25-30%)
Topic	**Chapters**	**Activities/Labs/Videos**	**Projects**
Air Pollution	18	-Particulates & Car Exhaust Lab -Effects of Acid Rain on Seed Germination Lab -Fossil Fuels Activity -Can Buildings Make You Sick Video	
Water Pollution	20	-Oil Spill Lab -No Water Off a Ducks Back Lab -Coliform Test Activity -Water Quality Testing Activity -Outrage at Valdez Video	Local Watershed Analysis
Solid & Hazardous Waste	21	-A Lab of Rot Lab -Grass Decomposition Lab -Garbage Video -Addicted to Plastics Video Recycle City & Toxtown Web Activity	Reduce, Reuse, Recycle Posters
Environmental Hazards & Human Health	17	-Ozone lab -LD 50 lab -Risk Assessment Activity -Home Pesticide Inventory Activity	Toxic Chemicals Presentations

Unit 7: Global Change – 4.5 weeks			**(10-15%)**
Topic	**Chapters**	**Activities/Labs/Videos**	**Projects**
-Sustaining Terrestrial Biodiversity: The Ecosystem Approach -Sustaining Aquatic Biodiversity	10,11	-Tragedy of the Commons Activity -Ecocolum Lab	
Climate Disruption and Ozone Depletion	19	-Greenhouse Effect Lab -Six Degrees Could Change the World Video	
-Cities & Sustainability -Economics, Environment & Sustainability -Politics, Environment & Sustainability -Environmental Worldviews, Ethics & Sustainability	22,23,24,25	-Micrometeorology Lab -Applying and Analyzing Cost – Benefit Analysis of Environmental Impact Statement Activity	-Land Use Scenario -Environmental Laws

Review for and AP Environmental Science Exam – 1 week **Post Exam – 3 weeks**	
Topic	**Activities**
Careers in Environmental Science	Guest Speakers will visit the classroom to discuss how Environmental Issues are addressed in their career field.
Service Learning Project	Students will be given time to work on and present their service learning projects that were assigned earlier in the semester. Projects are assigned based on student interest and can include, but not limited to the following: -Water Quality Testing -Green Construction -Public Planning -Transportation -Alternative Energy

Daily Expectations:

Be Responsible

- Know & follow lab safety procedures
- Be Prepared: Come to class with your supplies and ready to WORK- put in real EFFORT
- Come in to get help from me or your classmates when you need it.
- Do your own work on all assignments. If you copy, neither of you will get credit.

Be Respectful

- Practice Kindness: Speak kindly to one another ALWAYS
- Everyone in this class is important and will be treated as such
- No electronics-unless part of classroom activity

Be Reliable

- Be punctual to class and with work (***TARDIES = DETENTIONS)***
- Work from bell to bell (I dismiss you- not the bell!)
- Work with your lab group and do work in class

Student Information
AP Environmental Science

Sign this paper below and return it to Mr. McLeod as soon as possible.

You will be given class credit for turning this in tomorrow. Start the semester off right, and turn this in!

Student name (please print):_____

Address:_____

Home Phone: _____e-mail: _____

Parent/Guardian Contact Information:
Guardian #1 Name (please print):_____

Phone (and best times to call):_____

E-mail:_____

Guardian #2 Name (please print):_____

Phone (and best times to call):_____

E-mail:_____

Sign Return to the Instructor:

For parents: I have read and understand the class expectations for this course. I understand that my student is responsible for monitoring grades and informing me of his or her progress in this class. I also know that grades can be checked online. (https://ims.everett.k12.wa.us/)

Parent Signature: _____ *Date:*_____

For students: I have read and understand the class expectations for this course. I understand that my grade is my responsibility, and that it is up to me to monitor and inform my parents/guardians of my progress.

Student Signature: _____ *Date:*_____

Is there anything you would like me to know about you/your student?

LAB SAFETY CONTRACT & GENERAL RULES: Please read and Sign Below.

1. Conduct yourself in a responsible manner at all times.
2. You will not be admitted to the lab unless you have completed the required pre-lab. You will receive a mark of "0" for any missed labs due to lack of preparation.
3. Follow all written and verbal instructions carefully. If you do not understand, ask.
4. Your instructor must be present at all times during the lab.
5. Perform only those experiments authorized by the instructor.
6. There is no horseplay, or any type of practical jokes or pranks allowed in the lab, they are dangerous, to you and to everyone.
7. Safety glasses *or* chemical safety goggles and lab aprons are required, as indicated by your instructor, any time chemicals, heat or glassware is used. There are **no** exceptions to this rule.
8. Contact lenses should not be worn in the lab.
9. Dress appropriately: No loose or bulky clothing, jackets, skirts, shorts, dresses, sandals or open-toed shoes are allowed. All long hair must be tied back, and long bangs clipped back. Dangling jewelry, rings and watches should not be worn.
10. Carry out experiments with care and caution. Be aware of your surroundings, observe good housekeeping practices, and keep aisles clear.
11. Never leave experiments unattended. Do not wander the room, distract others, or interfere with the laboratory experiments of others.
12. Be aware of emergency equipment locations, and operating procedures.
13. Keep hands away from face, eyes, mouth and body while using chemicals or preserved specimens. Wash your hands with soap and water after performing all experiments.
14. Do not sit or lean on laboratory tables or counters, as corrosive residue or glass fragments may be present.
15. Know what to do if there is a fire drill during a lab period; containers must be closed, gas valves turned off, fume hoods turned off, and any electrical equipment turned off.
16. No food or beverages are allowed in the lab, or at the lab stations.
17. Dispose of all chemical waste as instructed. Check waste container labels twice before adding your chemical waste to the container.
18. NEVER return unused chemicals to their original container.
19. Acids and bases must be handled with extreme caution.
20. Handle all living organisms or preserved biological specimens in a humane manner, and with respect. Dispose of specimens properly, as instructed.
21. When using knives or sharp instruments, always carry the tips and points pointing down and away. Always cut away from your body. Grasp sharp instruments only by the handles, and never try to catch a falling sharp instrument.
22. If you notice any damaged or missing parts to school equipment, inform your instructor immediately otherwise you may be held responsible. Report damaged electrical equipment immediately, do not use it.
23. ALL chemicals, equipment, supplies, and specimens must remain in the lab. Any removal of laboratory items from the lab will result in disciplinary action.
24. REMAIN CALM and REPORT any accident IMMEDIATELY, no matter how minor.

AGREEMENT:

STUDENT: I, _____, (student's name) have read and agree to follow all of the safety rules set forth in this contract. I realize that I must obey these rules to ensure my own safety, and the safety of all others in the lab. I will come prepared, follow instructions closely and carefully, and contribute to maintaining a safe environment for everyone to work in. I am aware that any violation of this safety contract or misbehavior on my part may result in being removed from the laboratory setting. I understand discussion about my behavior will take place after the lab has been completed. Any disciplinary consequences are dependent on the severity and/or frequency of my misbehavior.

Student Signature:_____ Date:_____

PARENT: We feel that parents/guardians need to be informed regarding our effort to maintain a safe science classroom/laboratory environment. Your signature indicates that you have read this contract, are aware of the measures taken to ensure the safety of everyone in the lab, and have discussed the importance of lab safety with your son/daughter.

Parent/Guardian Signature:_____ Date:_____