**AP Environmental Science (APES)**

**2019-2020**

**Course Expectations and Syllabus**

**Instructor: Brad Kernan- Room S-104**

**Email: bkernan@everettsd.org**

**Phone: (425) 385-4584**

**Office Hrs: 6:45-7:15am and 2-3:30pm daily and by appointment**

**Website:** [**https://www.everettsd.org/Domain/675**](https://www.everettsd.org/Domain/675)

**Also check the Canvas page for the class**

# **Textbook:** Living in the Environment: Principles, Connections, and Solutions 17th

#  Edition, G. Tyler Miller Jr. & Scott E. Spoolman, Copyright 2009, 2012

#  Brooks/Cole

# **Lab Manual:** Laboratory Manual for Environmental Science, E. Wells,

#  Copyright 2009, Brooks/Cole, Cengage Learning (not required)

# **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.
1. The Earth itself is one interconnected system.
* Natural systems change over time and space.
* Biogeochemical systems vary in ability to recover from disturbances.
1. 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.
1. Environmental problems have a cultural and social context.
* Understanding the role of cultural, social, and economic factors is vital to the development of solutions.
1. 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.

**Assignment Due Dates:**

All assignments are due on the date communicated by the instructor. Unless otherwise indicated, no assignments may be sent to the instructor electronically. It is highly recommended you get a USB drive. The student is responsible to print their assignment before class starts. ***Late Assignments will be accepted.*** As self-management is a 21st century skill, late assignments will not be eligible for full points. If there are circumstances beyond your control let me know prior to the due date. This is on an individual case by case basis.

**Unit Review Questions:**

For each unit, students will be required to read the varying textbook section and answer questions associated with the reading concepts.

**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.

**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. Unit tests will be entirely made of multiple choice questions pertaining to material from the unit. Free Response Questions (FRQs) will be assessed at least 2 to 3 times per unit. Material covered in FRQs will include current unit and previous unit(s). Considerations will be given to FRQs where some questions are covered on future units.

**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 turn in a Current Event Notebook. The Current Event must be related to environmental science, if possible tie the current event to the current unit being studied. You may use newspapers, magazines, Public Radio, or the Internet.

**Course Materials**

● 1:1 classroom expectation: device present and charged daily

● Online access for course materials

● ½ - 1 inch 3-Ring Binder or composition notebook for handouts

● Pencils and Pens (blue or black pen only)

● Highlighter

**Schoolwide document links**

* Student rights and responsibilities- [http://docushare.everett.k12.wa.us/docushare/dsweb/Get/Document-23084/SR&R%202017-18%20English.pdf](http://docushare.everett.k12.wa.us/docushare/dsweb/Get/Document-23084/SR%26R%202017-18%20English.pdf)
* Technology Handbook- <http://docushare.everett.k12.wa.us/docushare/dsweb/Get/Document-89092/Parent%20and%20student%20handbook.pdf>

**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:**

# 80% - Summative Assessments: Tests, lab reports and large projects

* 20% - Formative Assessments: Class assignments, homework, quizzes, lab work, student journal, *21st Century Skills*: Citizenship, Communication, Creativity, Growth Mindset, Critical Thinking, Collaboration

# **Letter grades will be determined by:**

|  |  |  |
| --- | --- | --- |
| **A** 93-100**A -** 90-92 **B+** 87-89**B** 83-86  | **B-** 80-82**C+** 77-79**C** 73-76**C-** 70-72 | **D+** 67-69**D** 60-66**F** Below 60 |

**Classroom Expectations/Management Plan**

* The purpose of these Behavior Management Guidelines is to foster a safe, positive environment for learning by teaching the practices of self-discipline, citizenship skills, and social skills.
* During the first weeks of school, as a community, we will develop our classroom norms.
* Classroom Behavior expectations
	+ Be of a growth mindset.
	+ Be respectful and understanding of others.
	+ Be productive and always do your best work.
	+ Cooperate, collaborate, communicate, and think like a scientist.
	+ Be present in mind and body to participate and contribute to the class learning environment.
	+ Be a self-advocate!
* Water bottles are allowed in class, but not in lab areas. For lab safety reasons, other food and drink are not allowed.

**Cellphone (PED) policy:**

Cellphone or Personal Electronic Device (PED) use is not allowed in the classroom. They should be REPed during class time [silenced (no sound) kept in your students backpack or at the cellphone charging station]. If you need to reach your student during the school day please call Everett High School’s front office and they will connect you to the classroom (425-395-4400).

If your student has not REPed their cellphone or PED and has it out during the class period:

**1st incident:** Polite reminder to REP your phone by putting it away.

**2nd incident:** Polite reminder to REP your phone by putting it away for remainder of class period.

**3rd incident:** REP your cellphone PED ticket along with e-mail or phone call home.

**All future incidents:** Cell phone will taken by the teacher or brought over to the office the remainder of the period or the school day. Student may pick up cellphone or PED after school or parent/ guardian will need to come to pick up. Referral sent to the office.

|  |  |
| --- | --- |
| **Respect**  | * I control my phone.
* I use cell phones and other Personal Electronic Devices (PED) during   lunch and passing time.
 |
| **Engage**  | * I use my school device in class.
* Save my battery! I leave my phone off or silenced in my pocket or bag.
 |
| **Prepare**  | * I let people know I am at school and will not be available until lunch or passing period.
* Nobody knows I have a phone while I am in class.
 |

**Classroom Management Plan:**

An incident results when a student’s behavior interferes with the learning process; this includes the use of electronic devices. The following are school guidelines. The teacher may include other steps, consequences, or methods of working through the incident as appropriate to the situation.

|  |  |  |
| --- | --- | --- |
| 1. First incident: (any combination of steps below)
	1. Conference with student
	2. Detention (Parent contact when assigning detention)
 | 1. Second incident: (any combination of steps below)
	1. Conference with student
	2. Parent contact
	3. Detention (Parent contact when assigning detention)
 | 1. Third and any further incidents: (any combination of steps below)
	1. Conference with student
	2. Parent contact
	3. Administrator referral
 |

**Late work policy:**

* All assigned work is chosen carefully to aid learning and understanding; it is very important that students complete their work. If students cannot complete their work on time, or are absent, they need to set up time (before/after school) to come in and get assistance to get back on track.
* Late work is accepted until the end of the unit test for credit. . Late work completed after the unit test for retakes will show as completed assignment but will not receive credit.
	+ Assignments labeled as missing (M) or No (N) on LMS can still be completed for credit until the day before the unit test.

**Make-up work policy (due to absence):**

* Please check the box for missed handouts, the class calendar or a friend in the same class or set up a time to meet with the teacher before/after school to discuss what was missed and needs to be made up.
* Make-up work is accepted until the end of the school day before a unit test.
	+ Assignments labeled as missing (ab) on LMS can still be completed for credit until the day before the unit test.

**Everett High School Reassessment Policy**

* All students will have the opportunity to retake summative exams. Formative assessments and assignments may be redone at the discretion of the teacher.
* Retakes may not apply to long-term, multi-step assessments such as research papers, projects or presentation. In many of these cases, students receive feedback on each step of the process and have multiple opportunities to redo portions of the paper or project before final submission.
* Prior to a reassessment, students must provide evidence that relearning has occurred by completing a reassessment plan including the required formative and corrective work as determined by the teacher.
* Students must complete reassessments within a reasonable amount of time allowing for reteaching/relearning to take place. Reassessment plans (departmentally developed) should be complete within 7 school days of the original assessment and prior to the last two weeks of the current term.
* Students may be reassessed on a portion of the summative assessment, the entire summative assessment, or in a completely different format as determined by the teacher.
* All laws, statutes and policies pertaining to IEP or 504 accommodation plans will be followed. You, the student, are also expected to take part in this by self-advocating: letting the teacher know when the system in place is working for you or revisions are necessary for increasing your success.

**Academic Honesty**

At Everett High School we value honesty and integrity of work. Cheating on tests and homework by copying other people's work is not acceptable. Making copies of someone's electronic file is also considered cheating. When you cheat, you will receive a failing grade for that learning activity. Cheating also includes the aiding and abetting of cheating by others.

Plagiarism, the act of using another author’s work without crediting that author and thereby implying that it is one’s own, is academically dishonest and a form of cheating. Students found cheating or plagiarizing will be referred to school administration.

**Laboratory Safety**

Science classes involve use of laboratory facilities and equipment. Lab equipment must be handled with care. If you break lab equipment intentionally or due to carelessness, you will be charged the replacement cost. Labs permit greater student freedom and responsibility. This should not be abused. Abuse of lab privileges will result in

• 1st occurrence: removal from lab.

• 2nd occurrence: no credit for the assignment, note sent to parents and to administrator.

• 3rd occurrence: removal from lab, referral to administrator, and parent conference required before lab privileges are reinstated.

\*Students are responsible for learning material if removed from lab at any level.

**Lab Attire**: All students will dress appropriately on lab days. That means close-toed shoes, long pants, long hair tied back, etc. If a student refuses to change into appropriate clothing, they will receive a zero for the lab. All students and their parents/guardians must read the “Flinn Scientific Student Safety Contract”, then sign and return the signature page showing that they read, understand and agree to follow the safety rules. This must be turned in before a student can participate in labs.

**How to Succeed:**

1. **Great Attendance:** Be present physically & mentally. Missing class puts you behind.

2. **Come Prepared:** Bring all needed materials and have them ready when the bell rings.

3**. Self- Advocate & Get Help:** If you’re stuck, ask for help from the teacher or from another student. Come in on your own for after school assistance.

4**. Do Your Homework:** This is your practice and the only way you’ll know if you’re “not getting it”!

5. **Live Healthy**: Eat healthy foods, drink water – sports drinks, soda, and energy drinks have an adverse effect on your ability to focus.

**Course Outline**

# ***Subject to change if necessary***

Unit 1- The Living World: Ecosystems

* 1. Introduction to Ecosystems
	2. Terrestrial Biomes
	3. Aquatic Biomes
	4. The Carbon Cycle
	5. The Nitrogen Cycle
	6. The Phosphorus Cycle
	7. The Hydrologic Cycle
	8. Primary Productivity
	9. Trophic Levels
	10. Energy Flow and the 10% Rule
	11. Food Chains and Food Webs

Unit 2- The Living World: Biodiversity

 2.1 Introduction

 2.2 Ecosystem 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 and 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 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 Invasion

 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 Materials

 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

 9.2 Reducing Ozone Depletion

 9.3 The Greenhouse Effect

 9.4 Increases in the 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

Unit 10- Agricultural Experiences

Likely experiences will include field trips to local farms and places of industry.

***Student Information***

***AP Environmental Science***

Please sign this paper below and return it to Mhr. Kernan 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:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Parent/Guardian Contact Information:

Guardian #2 Name (please print):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phone (and best times to call):\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

E-mail:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sign below and 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 students will receive printed progress reports approximately once a month, and 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?**