

AP Environmental Science Student/Parent Syllabus

Instructor

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Personal Philosophy

I have over 23 years of teaching experiences and I hold National Board Certification. My experience is limited to Secondary Education however I have taught every level of student from those who could not read to Ivy League bound students. In addition the courses themselves are equally varied, from astronomy and chemistry to anatomy/physiology and biology. This will be the first year for me teaching Environmental Science as a stand alone class. As a result my philosophy regarding this class will probably evolve over time. As it stands today I feel that three general objectives will permeate the course and the lessons: awareness, acquisition and action.

The first objective is to increase awareness. In my experience with students over the years I found an alarming level of unawareness when it comes to current and potential environmental issues. Under this theme “Why” is explored. Why are these issues important and relevant? We will realize that human actions effect natural systems. If I do my part well I will create in my students a sense of awe and reverence toward our earth. Students will also come to appreciate the duality of nature; its resilience and fragility.

The second objective is the acquisition of declarative and procedural knowledge. With an interdisciplinary approach we will increase our environmental literacy. Essential learning “What” we know. We will understand the remarkable interrelationships that exist between the biotic and abiotic world. We will also realize that a complete understanding of environmental issues demands that we look into social, economic and political realms. This acquisition theme must also include procedural knowledge. Here we learn the “How”. We explore the procedures and practice using the tools that are responsible for generating the data that has lead to our current understanding of nature. We learn how to evaluate both data and sources of data. If I am successfully meet this objective students will become independent learners with a greater ability to evaluate benefits and risks associated with their actions and the actions of others.

The last objective is that of action. We will examine actions taken in the past, discuss actions that we can take today and predict actions that may be needed in the future. To meet the needs of the future generations and live sustainably today we must become a generation of stewards of the earth.

Class Profile

The AP program at Atlantic is robust. The last few years have seen students from every grade and every level, it has truly become one of the most diverse classrooms on campus. Atlantic High follows a block schedule. We meet our students two or three days each week for 36 weeks. Regular class periods are 110 minutes long. Labs could take up about 25 percent of instructional time. This percentage will likely grow if student activities are included.

Currently there are no pre-requisites for this course. Students are admitted through teacher recommendation or teacher approval. Since all students are at least juniors with good academic standing they will have taken 1 year of biology and 1 year of chemistry at a minimum. Many students enrolled in this course have 3 or more science credits.

Course Description

"The Advanced Placement Environmental Science course is designed to be the equivalent of a college introductory course. Advanced Placement Environmental Science will include those topics regularly covered in a college Environmental Science course for majors or in the syllabus from a high-quality college program in introductory Environmental Science. This Environmental Science course differs significantly from the usual first high school course in Environmental Science with respect to the kind of textbook used, the range and depth of topics covered, the kind of laboratory work done by students, and the time and effort required by students. The Advanced Placement Environmental Science course is designed to be taken by highly motivated students. Many students will have successfully completed courses in high school biology and high school chemistry. The course aims to provide students with the conceptual framework, factual knowledge, and analytical skills necessary to deal critically with the rapidly changing science of Environmental Science.

The scope of this course versus the time frame in which we have to work will absolutely demand the utmost dedication on the student's part. The student will need to spend anywhere from 7-14 hours a week doing independent study and class preparation. Students can also expect independent study assignments during holiday breaks. Reading the text is not optional or merely suggested, reading the text is REQUIRED. Student reading assignments will serve as a foundation for the lectures to build from. (C8)

Course Overview

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Textbook

Friedland & Relya. Environment. 2nd ed.

Teaching Strategies

Exam Expectations

I believe it is good practice to make your expectations for students as clear as possible anytime but especially since the majority of their grade is based upon their performance on my exams/quizzes I provide students with an exam expectation sheet for every exam. Its purpose is to direct students in their exam preparation. Students so young in their environmental science career often lack the judgement that is necessary to sift through an abundance of terms and concepts and decide what is most important and applicable. My student's time is valuable and I want their efforts rewarded. **My website, (thebioedge.com) contains exam expectations for each test.** The first word in each line is an action word it tells the students what skills are necessary in each topic to be successful on the exam. In addition I give students a reference sheet with a description for each action word on the expectation sheet. For instance, "Explain" means, "give a clear account including causes, reasons or mechanisms" and "Outline" means "give a brief account or summary". These action words communicate to the student the level and type of knowledge needed for each specific question. Obviously a brief description of the question topic follows each action word.

Homework and Lecture

Over the years I have developed a disdain for students taking notes in class. I have found that if you require students to take notes in class each lecture becomes an exercise in stenography. The students become so focused on what I say or what the powerpoint slide shows that they do not "hear me" they have no time think about what is said or shown, they have no time for contemplation and as a result student questions decrease in number and the class becomes a one way street with me disseminating information rather than a discussion (two way street) between students and teacher.

Instead I believe that homework is the setting for students reading and writing of science concepts. The class is a setting for seeing, hearing, speaking and doing. Thus all student notes are to done prior to each lecture. If students feel the need record what is emphasized in class all they need to do is amend their notes from the night before. I suggest students to strikethrough notes that I do not cover in class or if I emphasize a section and the student generated notes do not then a quick note can be made to remind the student to reread/ outline this concept at a later time.

Help and Tutoring

Every student has three avenues for help, all of which are free of cost. First once a week a biology teacher from our department provides after school help and instruction for any student who so chooses. Secondly students can sign up to receive peer tutoring from National Honor Society students and past AP Biology students who have shown mastery on the AP exam. Lastly as a teacher I provide my students with my home telephone number that they may use at their discretion for extra help or for simple secretarial type issues.

Lab Component

To science in general as a process, lab activities emphasize development and testing of the hypothesis; collection, analysis, and presentation of data; and a clear discussion of results. Formal reports are required and must include the aforementioned elements, as well as proper labeling of tables and graphs. Statistical analysis and data presentation is required wherever possible. In many cases, software and Internet simulations are conducted in support of the lab being undertaken.

The availability of computers has also allowed us to move into the area of computer simulation. In these activities I provide students with handouts demonstrating different lab situations. The students use the simulation software to adjust the numerous variables to answer the questions that have been provided. The software does not replace all traditional labs but does provide an alternative for students to demonstrate lab skills students. With the addition of computers to our labs, we are starting to use scientific probes and their analysis software as part of the lab procedure. Students are encouraged to write their labs using our network software and to import their data from the probe software.

This part of the class is far and away the most variable from year to year. In a perfect world students will run through a set of predetermined labs. Instead the labs are administered throughout the year where they fit best. For instance sometimes when the school shuts down for diagnostic testing I have found that I can sequester my students and run them through two or three labs during a week. Other times I have found that three weeks of intensive labs in May are looked at favorably by students because they their AP exam is over, they can put more quality work toward each lab. And yet in other times I find beneficial to run a dry lab using the lab software programs for certain AP Biology Labs. Additionally student activities may fall into this category since many activities either require students to use science specific tools, data analysis/collection, specific environmental science procedures or some combination of these.

Student Evaluation

Exams

Three exams (approximately 3 each nine weeks) are given at the completion of each topic (2-3 chapters worth of material) and will be announced well in advance. Each exam will have a multiple choice component and a written component. The number of multiple choice questions and free response questions are half as many as the actual AP Biology exam. The time frame is also cut in half in an attempt to maintain similar pacing necessary for the AP Biology.

Quizzes

The number of quizzes can vary however they often follow the lectures and cover a chapters worth of material. They are multiple choice in nature and consist of 10 to 15 questions

Homework

The primary focus of homework is to prepare, reinforce and review AP Environmental concepts. Outside reading is required. Computer/website based reference materials are also excellent ways to prepare for new units or gain a greater understanding of current material. The homework consists of 20 to 40 multiple choice questions and an occasional free response writing. It is my belief that much learning can take place by going over student responses and clearing up misconceptions before their unit exam. Students must do hundreds of multiple choice questions over the course of the year to get a feel for the nuances of multiple questions and ultimately gain confidence.

Data Analysis

Most information in science is arrived at by the analysis of data collected from experimentation. In order to draw appropriate conclusion, data must be arranged in a workable format. Part of your evaluation in this course will be the ability to show mastery not only in the analyzing of specific data, but also the ability to organize raw data into charts, tables, and/or graphs.

Extra Credit

Make-up Work

It is the responsibility of the student to make up any work missed due to an excused absence (excuse note must be received upon the student's return to school). The teacher is not responsible for reminding students when they are missing work. After an excused absence the student should determine what work was missed and turn in the work in an amount of time equal to the number of days the student was absent.

Laboratories will be made up at the discretion of the teacher and in most cases the assignment will not be the same. Note: I highly suggest that you plan to attend every class, absences are "killers" in AP science classes.

Exam retakes are possible and will be worked out on a case by case basis.

Grading Scheme

Your grade in this course will be comprised of the following parts:

66% Exams (~2 per nine weeks) "What you know"

33% Process Skills "What you can do"

The grading scheme includes a 4point scale (IB grading philosophy). Each assessment is assigned a number from 1-4 based upon the established rubric. The mode of all student grades determines the final quarter and semester grades.

Student Activities

Can and will vary from year to year.