

Biology 111
Environmental Science
Spring 2012
T.R. Wade

“Humankind has not woven the web of life. We are but one thread within it. Whatever we do to the web, we do to ourselves. All things are bound together. All things connect.” ~Chief Seattle, 1855

Environmental Science is an interdisciplinary study combining thoughts from many areas including biology, chemistry, geology, economics, politics, ethics, etc. It is a study of how the earth works, how we affect the earth's life-support systems, and how we deal with environmental problems. In this course students begin with a study of natural ecological systems and principles in order to understand the interconnected complex workings of our world. Students then apply these ecological principles to local and global environmental problems as we study the human impact on the biosphere. Students will be confronted by new thoughts and ideas as we wrestle with various environmental issues and hopefully learn how to live more sustainably on this earth.

According to one environmental educator, the goals of environmental education are illustrated in several basic questions:

- What do I know about the place where I live?
- How am I connected to the earth and other living things?
- What is my responsibility as a human being?

We will explore these and other questions in both lecture and lab this semester. Biology 111 Environmental Science is equivalent to ENV 131 for the Environmental Studies Major and also counts toward the Sustainability Minor. In addition, Bio 111 supports the Sustainability Theme and counts towards the SNT and INQ requirements for the Oxford GEP.

Learning Goals for Science, Nature, Technology (SNT)

Upon completing the Science, Nature, Technology (SNT) General Education requirement, students will be able to:

- Analyze data, develop hypotheses, and design experiments to address scientific questions
- Use problem solving, critical thinking, and quantitative skills to address scientific questions
- Communicate scientific information verbally and in writing

Text: *Environmental Science, Earth as a Living Planet*, Botkin and Keller, 7th edition

Learnlink Class Conference: Be sure to add the icon to your desktop and check our conference regularly. I usually send an update on the readings and topics for the next week's lecture sometime on Friday.

Blackboard Website: Bio 111 also has a blackboard site that will be helpful to you for lecture and lab resources. You might even see yourself ☺ I'll let you know when it is available for use.

Lecture: Pierce 101, 10:00 a.m. - Tuesday/Thursday

Proposed Lecture Schedule

Date		Topic	Chapter/Section
Jan.	19	Science as a way of Knowing	Lab Handout
	24	Tragedy of the Commons	Paper by Garrett Hardin
	26	Ecoeconomics and Environmental Policy Section 27.2 p. 599-601, Sec. 27.4, Sec. 27.5, Sec. 27.9	
	31	Key themes of Environmental Science	1
Feb.	2	Ecological systems: Systems and Energy Flow Section 3.1, 3.7 and 3.8 and Chpt. 6	
	7	Energy and Productivity	9
	9	Biogeochemical Cycles	5
	14	Nutrient Cycles and Catch-up	5
	16	Test 1	
	21	Nitrogen, Carbon, Water, Phosphates	5
	23	Human Population Dynamics	4
	28	Population Growth Rates and Predictions	4
March	1	Just food for a hungry world	11
	6	Environmental Impacts of feeding the billions	12
	8	Water Resources	21
	13& 15	Spring Break	
	20	The Chattahoochee: Typical Urban River Issues	22
	22	Test 2	
	27	Everybody lives downstream of somebody	22
	29	Air Quality	24
April	3	Secondary Pollutants	24
	5	Global Climate Change: The Evidence	23
	10	Ozone Thinning	23
	12	Air Quality Solutions	
	17	Biodiversity and species interactions	7
	19	Test 3	
	24	What is a species? How did they evolve?	7
	26	Biodiversity: Threats, Protection and Policies	14
May	1	Wrap up	

FINAL EXAM – Monday, May 7, 2012- 9:00-12:00 (Test 4 and Cumulative Section)

Laboratory Goals: One of the goals of environmental education is to provide opportunities for students to get to know the “place” where they live and make connections to the natural world so that they can better understand the human impact on these natural settings and make more informed decisions about the world in which we live. During the laboratory portion of the class students will explore various ecosystems of our ecoregion, the piedmont of GA. In addition, students will have the opportunity to learn sampling and other techniques used by ecologists in the field.

Lab meets 2:30-5:30 Thursday afternoons in Pierce 101. There is no lab manual; handouts will be given for various labs and also be made available on the blackboard site.

Proposed Lab Schedule

Date	Topic
Jan. 26	Scientific Investigation
Feb. 2	Terrestrial Investigation – Oxhouse Science Center
9	Logging Case Study: Timberrrrr!
16	Logging Case Study: Data, Results & Discussion
23	How Wet is that Area?
March 1	Wetland Investigation – GWF property
8	Midterm Lab Practical
15	Spring Break
22	Stream Assessment: Data Collection
29	Stream Assessment: Sorting, results and conclusions
April 5	Stream Protection: Water Reclamation Plant Covington, GA
12	Primary Succession on a rock outcrop: Davison Arabia Mt.
19	Just how Smart is our Growth?
26	Final Lab Practical

Lab schedule is subject to change based on any number of uncontrollable factors (the blooming of flowers, trees dropping their leaves, hurricane rains, etc.)

Lab/Writing Assignments: Students will be submitting various types of writing including lab reports, critiques, position papers, etc.

Evaluation:

Tests	300 points
Midterm Lab Practical	50 points
Final Lab Practical	50 points
Lab/Writing Assignments (class and lab)	80-100 points
Class Participation (lecture and lab)	15 points
Final Exam	175 points
*Total Points	about 690 points

*Total points may vary based on possible changes in certain assignments over the semester. Grades are assigned on a plus-minus scale.

“Student work submitted as part of this course may be reviewed by Oxford College and Emory College faculty and staff for the purposes of improving instruction and enhancing Emory education.”

Office Hours: Monday, Wednesday and Friday 9-10 a.m. OR by appointment (4-8395) OR you can always just come look for me but remember I might be working in the labs or out in the greenhouse.

HONOR CODE: The Honor Code of Oxford College applies to all work submitted for credit in this course. All such work will be pledged to be yours and yours alone. This is the case when you place your name on any work (tests, writing assignments, lab reports, research papers, etc.) submitted. There will be times when you may work in a group to collect data but the writing assignments will be on your own after that point. If you have any questions about how the honor code applies to any tests or assignments please ask me!!!

Absences: The absence policy is outlined in a separate handout. Unexcused absences or a failure to follow the procedures outlined in that handout will result in a reduction of your grade. Penalties are stiff so pay close attention to the handout. Additionally, tardiness is rude to other students and to the professor and will result in a decreased grade.

Cell Phones: They must be turned off if brought into class or lab. They take your attention away from the class and are an unnecessary distraction in the class, field and vans. Cell phone etiquette requires one to step away from others when talking on the phone so that you respect their time and space. Phones must be left at the front of the classroom in your book-bag during tests.

Tips for being successful in this class:

Be prepared for class: Read assignments before coming to class so that the material will sound familiar to you as we go over it in class and you can make significant contributions to class discussions.

Be prepared in class: Bring textbook to class as we will refer to diagrams and material in the text during class time.

Take good class notes: Handouts and other supplemental materials will be given to you on occasion in class but a set of good class notes is imperative for mastering the material.

After class: Go back over your notes. If you have “holes” in your notes, get the missed material from another student in the class or see me during my office hours. Do not wait until the test to fill in these gaps.

Preparing for tests: Remember the tests will include material from lecture and lab so take good notes in both. Handouts and lab materials will be included on the test material so refer to materials on the class Blackboard site. Don’t wait until the last minute to begin preparing a study guide for the tests. The study guides you prepare will help you not only for the individual test but can be used in preparation for the exam. If you do poorly on a test come to see me so that you can go over the key and figure out where your mistakes were.

Again, a good set of class notes is key to performing well on tests in this class since powerpoint presentations are usually more pictures than text.