



ENVS 200: Introduction to Environmental Analysis

Course Syllabus – Fall 2007

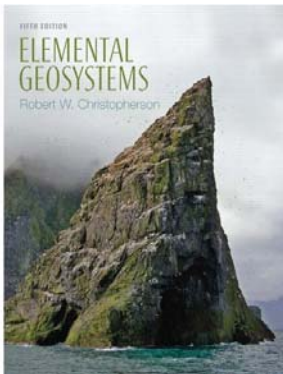
Lectures:	Tues & Thurs at 10:30am-11:50pm	100 Towne Hall (Heilmeier Hall)
Recitations:		358 Hayden Hall

Instructor:	Dr. Alain Plante	162 Hayden Hall, 215-898-9269 aplante@sas.upenn.edu
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Course Description

An introduction to the science of environmental analysis and management. We will pursue the flow of energy through Earth-surface natural systems as the best strategy now available to understand the operation of those systems, and we will use energy analysis to compare environmental solutions. We will examine the history of development of the biosphere, and the extent to which environmental solutions will benefit from mimicking the configuration of systems that have adjusted to environmental changes over 3 billion years of evolution. We will develop the long-term temporal perspective on environmental problems that emerges from an understanding of the sweep of Earth's history. Students will leave the course with a better appreciation of the complexity of environmental problems, and a realization that such complex problems are not often successfully addressed with simplistic solutions.

Texts and Resources



Christopherson, R.W. (2007) *Elemental Geosystems*. Pearson Prentice Hall

Blackboard materials

<https://courseweb.library.upenn.edu> (ENVS 200-001-2007C)

Supplemental: McConnell, D. et al. (2008) *The Good Earth*. McGraw-Hill

Strahler, A.H. & Strahler, A. (2005) *Physical Geography*. Wiley & Sons

Student response systems

This class will make extensive use of student response systems (“clickers”) to enhance student participation during lectures, as well as for graded in-lecture quizzes. You will be required to bring your clicker to EVERY lecture. **Forgetting your clicker will NOT excuse you from a graded in-lecture quiz.** Clickers will be distributed at the beginning of the semester, and must be returned at the end of the semester. I recommend treating your clicker like a diamond – do not lose it! Clickers lost or damaged during the semester should be reported ASAP. Multiple infractions will be subject to tariffs of \$50 paid through the Bursar’s office.

Grading

Distribution of Marks

In-lecture quizzes (best 5 out of 6)	10%
Recitation assignments & attendance (10 @ 3% each)	30%
Midterm exam	30%
Final exam	<u>30%</u>
	100%

Assignment of Final Grade

The grading system used will be consistent with that used throughout the School of Arts & Science. The word definitions of the grading system are applied to describe groups in which achievements are: excellent (A, A-), good (B+, B, B-), average (C+, C, C-), below average or fair (D+, D), and failure (F).

Grading Policies

- There are no make-ups for missed quizzes. If you miss a quiz, you will receive a grade of zero.
- No assignment will be accepted late. A grade of zero will be given for any assignments not delivered by the designated time and date.
- **Computer equipment failures will not be accepted as valid reasons for late submissions.**
- On both the midterm and the final, you will be tested on your assimilation of basic concepts, as well as your ability to apply the principles you have learned to problems that may or may not have been discussed in class. We reserve the right (and we will exercise that right) to ask you questions to which there are no established answers.
- Participation, for the purposes of the recitation, means having read the assigned materials **before** the scheduled class. The expectation is that you will each participate by raising issues that you did not understand during your readings, asking questions of the group during discussions, and provide your opinion and thoughts on various relevant subjects. It then becomes the grader's responsibility to track, as best they can, your overall contribution to the discussions throughout the semester.

Grade Dispute Policy

I have very little tolerance for "grade grubbing". Panic reactions to unexpected grades and concentrating exclusively on grades are counterproductive. That being said, if you are concerned with your performance at any point in the course, please discuss it with me and we will work out a strategy for improvement.

During the course of grading quizzes, assignments, and examinations, it is possible that a mistake could be made, particularly when trying to return exams to students in a timely manner. There are 3 categories of mistakes: (1) errors that introduce confusion or ambiguity in formulating questions, (2) errors of addition/subtraction in compiling individual student scores, and (3) errors of judgment in assigning full or partial credit to specific answers.

Errors of category 1 impose equal disadvantage on all students, and no adjustment will be made on any exam for perceived errors of category 1.

Errors of category 2 are easily corrected, and will be done so with due diligence. If you find an error of category 2, please write a description of that error on the back of the last page of your exam, and return the exam to your grader for consideration.

All graders of exams in ENVS 200 have been instructed to give each student the benefit of any legitimate doubt in determining the "correctness" of an answer to any question. We are far more likely to award more credit than an answer is worth than we are to award less credit. If you think you have suffered from one or more errors of category 3, describe those errors fully, in writing, on the back of the last page of your exam

and return the exam to your grader or instructor. We will review your exam to see if you should have been awarded more credit for those questions. We will also review the rest of your exam to see if you were awarded too much credit for any other answer.

Extra Credit

There are **no** opportunities for extra credit in this class.

Miscellaneous

Quantitative requirements

Quantitative problem solving will be an important component of this course. You will be required to perform basic calculations of quantities and rates, convert units, and basic statistical analyses. Why quantitative analysis? Because you can't just *talk* about environmental problems. Mathematics is a kind of global language that bridges disciplines. While economists and chemists might confuse each other because they use different words for the same concepts, mathematics can cut through this confusion. The outcomes of such calculations will help you assess the significance of the numbers presented to you. Quantitative evaluations provide context for qualitative assessments and inform decision-making. Quantitative skills are liberating and empowering. **Yes, you can do it!** Only a passionate dislike (or unreasonable fear) of mathematics will prevent you from succeeding in this course.

In addition, the computer and internet age has brought with it the capability for the storage of vast amounts of data. Skills in finding and sorting through this data are becoming increasingly important. You will be exposed to some of these very large databases during recitations. **Do not be intimidated by the size of the database!** Most of the databases actually contain a small amount of information repeated over and over again in time or space. It is important for you to understand the data content and quality, not data volume.

The expectation is for you to develop familiarity, comfort, and skill in manipulating quantitative data using various tools (e.g. handheld calculator, Excel spreadsheets, GIS, etc.)

I hope that you come to appreciate the contribution of quantitative skills to the broadest possible applications in your academic careers and beyond.

Academic misconduct

Students are expected to be familiar with and comply with Penn's Code of Academic Integrity, which is available in the Pennbook, or online at <http://www.vpul.penn.edu/osl/acadint.html>. I generally have a zero-tolerance policy for cheating, and all violations will be reported.

Students with Disabilities

The University of Pennsylvania strives to provide an environment for personal and intellectual growth of all its students, and also complies with the Americans with Disabilities Act of 1990 and Section 504 of the Rehabilitation Act of 1973. Student Disability Services (SDS) collaborates with the Office of Learning Resources to provide comprehensive academic support for students with disabilities. This office coordinates the self-identification process and the provision of reasonable accommodations, arranges auxiliary services, monitors campus accessibility, and refers students to other appropriate University services and programs. Students with disabilities who believe they may need accommodations in this class should contact the professor during the first week to make necessary accommodations.

Tentative Lecture Schedule

Session	Date	Topic	Quiz	Readings
1	Th, Sep 6	Course Introduction & Syllabus		
2	Tu, Sep 11	Atmosphere: Earth-Atmosphere Energy System		Ch 2,3
3	Th, Sep 13	Atmosphere: Air Pollution		Ch 2
4	Tu, Sep 18	Atmosphere: Atmospheric & Oceanic Cycling	✓	Ch 4
5	Th, Sep 20	Atmosphere: Atmospheric Water & Weather		Ch 5
6	Tu, Sep 25	<i>(away – guest lecturer)</i>		
7	Th, Sep 27	<i>(away – guest lecturer)</i>		
8	Tu, Oct 2	Hydrosphere: Water Resources	✓	Ch 6
9	Th, Oct 4	Hydrosphere: Groundwater and Wetlands		Ch 6, McC Ch 12
10	Tu, Oct 9	Hydrosphere: River Systems		Ch 11
11	Th, Oct 11	Hydrosphere: Ocean Systems	✓	Ch 13
12	Tu, Oct 16	<i>Fall break – no class</i>		
13	Th, Oct 18	Lithosphere: Deep Time & Geologic Cycle		Ch 8
14	Tu, Oct 23	Mid-term exam		
15	Th, Oct 25	Lithosphere: Continental Drift & Plate Tectonics		Ch 8,9
16	Tu, Oct 30	Lithosphere: Plate Tectonics		Ch 9
17	Th, Nov 1	Lithosphere: Earthquakes & Volcanoes	✓	Ch 9, McC Ch 5,6
18	Tu, Nov 6	<i>(away – guest lecturer)</i>		
19	Th, Nov 8	<i>(away – guest lecturer)</i>		
20	Tu, Nov 13	Lithosphere: Weathering		Ch 10
21	Th, Nov 15	Biosphere: Soils	✓	Ch 15
22	Tu, Nov 20	Biosphere: Origin of life		
23	Th, Nov 22	<i>Thanksgiving break – no class</i>		
24	Tu, Nov 27	Biosphere: Ecosystems and biomes		Ch 16
25	Th, Nov 29	Integrative: Basic biogeochemistry	✓	
26	Tu, Dec 4	Integrative: Global change		
27	Th, Dec 6	Integrative: Global climate change		McC Ch 17
Final	Tu, Dec 18	Final exam (9:00-11:00am)		

Recitation Schedule

Section	Schedule	Teaching assistant
201	Mondays, 11am-12pm	Chris Bernhardt
202	Tuesdays, 9-10am	Carli Koshal
203	Wednesdays, 10-11am	Chris Bernhardt
204	Wednesdays, 11am-12pm	Lindsey Swiacki
205	Wednesdays, 1-2pm	Lindsey Swiacki
206	Thursdays, 12:30-1:30pm	Carli Koshal

Session	Week of	Topic
1	Sep 10	Quantitative analysis
2	Sep 17	Heat island effect
3	Sep 24	Weather forecasting
4	Oct 1	Energy I: Personal energy
5	Oct 8	Energy II: Energy alternatives
6	Oct 15	<i>No recitation - Fall break</i>
7	Oct 22	Hydrology
8	Oct 29	Radioactivity
9	Nov 5	Age of the Earth
10	Nov 12	Virtual seismicity
11	Nov 19	<i>No recitation - Thanksgiving break</i>
12	Nov 26	Carbon cycle
13	Dec 3	Exam review