

# Environmental Science (ENVI 133)

## Macalester College – Fall 2009

**Lectures:** MWF, 1:10 - 2:10pm, Olin-Rice 250

**Labs:** Tues., 8 - 11:10am, Olin-Rice 275

**Instructors:** Louisa Bradtmiller (lectures); lbradtmi@macalester.edu; 651.696.6837; Olin-Rice 249C  
Office hours: M/W 2.10-3.10pm, F 11am-12noon (sign up outside office)  
Jerald Dosch (labs); dosch@macalester.edu; 651.696.6187; Olin-Rice 215  
Office hours: M/W 1-2.30pm or by appointment (sign up outside office or email)

### Course description

This course provides the basic scientific knowledge and understanding of how our world works from an environmental perspective. It provides a framework of knowledge into which additional information can be readily integrated over a lifetime of continued learning. Topics covered include, but are not limited to, general issues on the environment, basic principles of ecology and ecosystem function, human population growth, production and distribution of food, water resources and management, water pollution, hazardous chemicals, air pollution and climate change, biodiversity and its conservation, solid waste, energy resources, and sustainability. There are no prerequisites.

### Course Organization

Environmental Science is an extremely broad area and includes a wide array of topics, ranging from protecting endangered species to climate to human health. Rather than trying to cover everything that could be considered a part of Environmental Science, we will focus on a five major topics for approximately three weeks each. These topics are:

1. Biodiversity
2. Human population growth
3. Energy
4. Water availability and pollution
5. Climate change

### Goals for students

By the end of this course, students should be able to demonstrate the ability to:

- Collect data, analyze it, and draw reasonable inferences from it
- Read, comprehend and discuss scientific papers
- Communicate clearly and effectively through written and oral presentations of ideas

### Course Textbooks

1. Raven, P. H., L. R. Berg, and D. M. Hassenzahl. 2006. Environment, 6th Edition. John Wiley and Sons, Hoboken, NJ.
2. Weart, Spencer R. 2003. The discovery of global warming. Harvard University Press, Cambridge, MA.
3. Brown, L. R. 2008. Plan B 3.0: Mobilizing to save civilization. W. W. Norton, New York.

### Moodle

The class Moodle page (<http://moodle.macalester.edu/course/view.php?id=840>) will be updated

regularly, and should be your first stop for information about readings, assignments, and what to expect in class on any given day. The page is color-coded: anything in blue is a reading you should complete before class on the day of the entry, and anything in green is an assignment due that day. This will require some looking/thinking ahead on your part.

### **Grading**

Your final grade for this course will be determined by the number of points you accumulate throughout the semester.

Point distribution	
Memos (3 @ 10 points each)	30
Seminar summaries (3 @ 10 points each)	30
Participation	30
Hardin paper	30
Brown Paper	40
Weart paper	40
Lab grade	100
Exams (3 @ 100 points each)	300
TOTAL	600

### **Attendance**

Attendance in labs is mandatory. Attendance in lecture is at your discretion, although students who attend regularly are likely to receive higher grades than those who do not. The participation portion of your grade will be based on your contributions to classroom discussion and also on any pop quizzes that may turn up...

### **Exams**

There will be three exams in this course, spaced roughly evenly throughout the semester. They will cover material from lectures, labs, discussions, and readings assigned at any point before the date of the exam. The format is TBA, and may change from one exam to the next. Attendance at exams is required- failure to attend will result in a grade of zero for that exam. I realize that this seems obvious. There are only 3 instances in which you may reschedule an exam: 1) serious illness 2) a family emergency 3) a college sanctioned activity that requires you to be off-campus on the day of the exam. In all cases I will need to see some documentation (ie. a doctor's note, note from the Dean, etc.), and I ask that you notify me as soon as you know you will miss the exam.

### **Written assignments**

One of the goals of this course is to help develop your written communication skills. To that end, there will be three kinds of writing assignments due throughout the semester. All assignments are due in hard copy to me at the beginning of the class period on the due date. Please use double-sided printing.

Memos: Three throughout the semester- see schedule. 1-2 pages (typed, doublespaced). Write these memos to your fellow students- in addition to handing them in to me, you will exchange them with another classmate to read. These are meant to be your thoughtful reflection/evaluation of the

associated reading/discussion, and they do not require outside research. They are graded on a pass/fail basis, although I reserve the right to grade for content if I feel that students are not taking the assignment seriously.

Seminar summaries: Three throughout the semester. 1 page. Attend three environmental seminars of your choosing, and summarize what you learned. At least two of these must be EnviroThursday talks in the ES department, but the third can be any environmental talk/event on or off campus. If you're feeling creative, write your summary in the form of a news article or something else fun. If you cannot attend EnviroThursday talks because of a scheduling conflict, you may substitute other environmental talks/events on or off campus (talk to me first).

Papers: Three throughout the semester- see schedule. There will be one paper each on the Weart and Brown books, and a paper on Hardin's essay '*The tragedy of the commons*'. The Hardin paper is 4-6 pages long, the other two are 5-7 pages. See Moodle for a more specific description of all three assignments.

### Schedule of assignments/exams

Sept. 14th	Memo 1	Nov. 16th	Exam 2
Sept. 16th	Hardin paper	Dec. 2nd	Memo 3
Oct. 7th	Exam 1	Dec. 7th	Weart paper
Oct. 16th	Memo 2	Dec. 11th	Exam 3
Oct. 28th	Brown paper	Your choice	Seminar summaries (3)

### Labs

Lab sections will meet in Olin-Rice 275 on Tuesdays from 8:00-11:10 AM. **Labs will meet for the first time on Tuesday, 15 September—you must attend!** We will use the weekly laboratory time to engage in a variety of activities, including field studies, experimentation, field trips, computer modeling, etc. No make-up labs will be available and missing lab will result in a significant loss of points. The lab Moodle page can be found at <http://moodle.macalester.edu/course/view.php?id=841>

Laboratory goals:

#### I. TYPES OF EXPERIENCES

- A. Observational Studies
- B. Experimental Studies
- C. Modeling

#### II. TYPES OF SKILLS

1. Experimental design
2. Data collection
3. Data analysis
4. Literature review
5. Written and oral presentation

### Study help

Mark Davis, Professor and Chair of Biology, has written several Useful Flyers of Information covering a number of 'how to' topics, including reading a scientific paper. These can be found at

<http://macalester.edu/~davis/MADUFIs.htm>. You can also take advantage of the MAX center (and your peers!) for help with revising your writing.

### **Academic integrity**

I take all instances of cheating and plagiarism very seriously. It is YOUR RESPONSIBILITY to become familiar with Macalester's policies on what constitutes each of these offenses and to behave accordingly. Instances of suspected academic dishonesty will be handled as outlined in the guidelines. <http://www.macalester.edu/academicprograms/integrity.html>

### **Disabilities**

I am committed to providing assistance to help you be successful in this course. Accommodations are available for students with documented disabilities. Contact the Associate Dean of Students, Lisa Landreman (696-6220) to make an appointment. Please do this early in the semester to ensure that necessary accommodations are approved so that you can begin the semester successfully.

### **Miscellany**

If you have concerns about any aspect of this course, please come see me sooner rather than later. I am always interested to hear about how you think the class could be more interesting, and if there's a topic you're just dying to see covered, we'll see if we can fit it in. I will be as accommodating as possible with respect to religious/cultural observances (with appropriate notice). I will respond to email during 'normal business hours'. While its possible that I will check my email at 2am, I probably won't write you back until the next morning. So, don't wait until the last minute to email with that question about your paper that's due tomorrow.