ESM 204: Economics for Environmental Management
Bren School of Environmental Science & Management
University of California at Santa Barbara
Winter 2011

Class: TuTh 8:30-9:45 (Bren 1414).
Sections: See Class Schedule
Instructor: Professor Christopher Costello (4410 Bren Hall)
Prof. Costello’s Office Hours: Monday 8:30-9:30 and by appointment.

Teaching Assistant: Sara Sutherland, PhD student in Bren.
Ms. Sutherland’s Office Hours: TBA
Webpage: gauchospace.ucsb.edu

Introduction: What is economics from a practical, problem-solving point of view? And how can economics be used to analyze and solve environmental problems? The answers to these questions are the two central themes of this core course in The Economics of Environmental Management. Broadly speaking, economics is the science of how scarce resources are allocated: how people and firms do this allocation and how society might want to make decisions about scarce resources. When viewed in this way, it is clear that economics might provide a useful framework within which to analyze environmental problems and approaches to solve them. Because many environmental problems are caused by economic activity (carbon emissions, overharvesting renewable resources, toxic releases as a by-product of industrial production, urbanization), we will examine different approaches to adjusting human behavior and therefore the externalities associated with it.

To do so in a meaningful way will require a lot of work. The pace will be quick and the out-of-class workload will be heavy. (Expect an average of 8-10 hours of work per week outside of class.) The purpose of the course is to give you a solid foundation in those aspects of economics and quantitative policy analysis that are important to environmental and natural resource management and policy. The course will also serve as the foundation in economics for management, economics and policy electives in the Bren School.

There will be readings prior to most class meetings and homework assignments (projects) due every week (more or less). (Note that you only need to complete four projects over the course of the quarter – you choose which ones.) Consult the webpage regularly for precise assignments.

Grading: The course requirements are a midterm (20%), final exam (20%), homework/mini-projects (45%) and class/section participation (15%). The midterm will be in class and the final will be take-home, due March 17. The midterm will be closed book though you may bring one
single sheet of paper (8.5”x11”) with notes to the exam. Class attendance is mandatory; if you have to miss class, you must obtain approval prior to the start of class.

Lectures. Lecture slides will be available prior to the lecture on the class webpage. Hint for conserving paper: print using the “4 pages per side” on the preferences menu when you go to print.

Readings. Most readings will be available on the course webpage. Those that are not available on the webpage will be available in the Bren Commons. Not all readings will be covered in class or section; the readings will be covered on the midterm and final.

The one required text for the course is *Environmental Economics* (2nd Edition) by Charles Kolstad.

Several optional texts will be relied upon heavily at certain points in the course; students may wish to acquire some or all of these texts through an internet bookseller. Several are also available in the Bren reading room. These suggested textbooks are: Boardman et al: *Cost-Benefit Analysis*, 2nd Ed (Prentice-Hall, 2001) Hartwick and Olewiler: *The Economics of Natural Resource Use*, 2nd Edition (Addison-Wesley, 1998) Thomas Sterner, *Policy Instruments for Environmental and Natural Resource Management* (Resources for the Future, Washington, 2002).

A book that covers much of the material in the course at an elementary level is Goodstein: *Economics and the Environment* (any edition). A copy is in the Bren Commons Reading Room.

Assignments. All of the homework assignments are in the form of mini-projects – approximately one per week. For most of these the deliverable is a one-page memo (typed, single spaced, 12 point) to your policy-maker boss and an appendix with details. Upload a pdf of your entire assignment to Gauchospace (TA can answer questions on procedures). These mini-projects are a very important part of the course (as reflected in their contribution to your final grade). I expect to see high quality, polished, professional work. Writing quality counts! Assignments are due in class unless otherwise noted and should be handed in to the TA. Late work will not be graded (unless an exception has been granted prior to the due date). The TA will grade the assignments and return them to you promptly (within a week in most cases). You may work in a team of two on your assignments *but you cannot keep the same partner for more than one assignment* – keep moving! Although approximately one of these assignments is made every week, you need only complete *four* of them. If you complete more than four, your top four grades will be counted. Help from the TA or the instructor prior to the deadline will be limited to answering pointed questions. Do not expect the TA to lead you through the process of doing the project. Figuring out how to answer the question posed is an important part of the course.

Honor Code and Joint Work. Collaboration with your homework/project partner (who changes with every assignment) is obviously encouraged. Homework/project collaboration beyond this
is not appropriate and in fact constitutes a violation of the Bren Honor Code. I know there is a temptation when solving a homework problem to shout “Eureka” and share your insights with your fellow students. However, this defeats the purpose of the homework – to find a path to a solution on your own. Furthermore, with grading on a curve, sharing of answers effectively reduces the grades of those doing the sharing. *So do your homework on your own and keep it to yourself!* It goes without saying that the exams are your own individual work and you are on your honor to execute your exam individually and neither give nor receive aid.

**Prerequisites.** You are assumed to be fluent in multivariate calculus and to have completed a sequence in intermediate microeconomics at the level of Varian, *Intermediate Microeconomics*. At UCSB, this would be Econ 100AB. Alternatively, ESM 251 provides adequate preparation. If you do not have the prerequisites, you should defer taking the course until prerequisites have been satisfied. You are also expected to be conversant with Excel, particularly graphing and solver. If not, please take the time to learn it.

**Course Outline** The course is broken into the following 4 sections; the content of each is provided on the course web page:

1. Evaluating Public Environmental Projects
2. Measuring the Costs and Benefits of Environmental Projects,
3. Regulation, and
4. Policy and Dynamics of Renewable and Exhaustible Natural Resources