

ESM 204: Economics for Environmental Management
Bren School of Environmental Science & Management
University of California at Santa Barbara
Spring, 2018

Class: Tuesday/Thursday, 8:00-9:15 (Bren 1414).

Webpage: gauchospace.ucsb.edu

Sections: See Class Schedule

Instructor: Professor Christopher Costello (4410 Bren Hall)

Prof. Costello's Office Hours: Fridays 9:00-10:00. Also possible to make appointment.

Teaching Assistant: Sam Collie, PhD student in Bren.

Sam's Office Hours: TBA

Introduction: The main purpose of this class is to show how economics can be used to help solve environmental problems. I will introduce economics from a practical, problem-solving point of view. Broadly speaking, economics is the science of how scarce resources are allocated: how people and firms behave, the consequences for resource use and conservation, 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 influencing 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 fairly heavy. (Expect an *average* of 6-8 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 about every other week. *There will be a total of 4 assignments.* The course website will contain all details for these assignments.

Grading. The course requirements are a midterm (20%), final exam (25%), homework/mini-projects (40%) and class/section participation (15%). The midterm will be in-class (Tuesday, May 1) and the final will be held during finals week, TBA. 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. If you miss class without prior approval, you will receive a 0 as your class participation score.

Lectures. Lecture slides will be available prior to the lecture on the class webpage.

Readings. Readings are drawn from multiple sources. The required textbook is:

- *Environmental Economics* (2nd Edition) by Charles Kolstad.

Other readings (such as newspaper or journal articles) will be made available on the webpage.

Several optional texts will be drawn upon at certain points in the course; students may wish to acquire some or all of these texts. 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).

Assignments. All of the homework assignments are in the form of mini-projects – approximately one every other week. There will be a total of four assignments and you must complete all of them. 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 by the beginning of class unless otherwise noted. 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*. Please do not expect the TA to lead you through the process of doing the entire project. **Figuring out how to answer the question is an important part of the course.**

Honor Code and Joint Work. Collaboration with your homework/project partner (who changes with every assignment) is encouraged. But it is also important to find a path to a solution on your own, so please do not share answers across groups. *Please 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. Plagiarism will be treated very seriously and will involve reporting to the UCSB graduate division.

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 or ESM 251. 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, or a suitable substitute (such as R or Python). If not, please take the time to learn it.

Course Outline: Loosely speaking, the first half of the course involves introducing new concepts, which are broadly applicable across a wide range of environmental issues. The second half of the course involves more focused tools and approaches for addressing specific classes of environmental problems. The content of each lecture is provided on the webpage.