

Economics of Sustainability Management
Columbia University - SUMA K4190
Fall 2017
Tuesday 6:10 – 8:00 pm

Kitty Kay Chan
kkc2139@columbia.edu

Course Objective

Economics of Sustainability Management covers how to use an economic framework to analyze environmental decision-making. Students will learn to understand, apply, and critique basic micro-economic tools that inform environmental problems. The course builds on core economics courses and addresses issues of environmental, resource and sustainability economics. By the end of the semester, students will gain experience in using economic concepts to recommend or critique actual environmental decisions. An important goal of the class is to have students work in groups to apply economic concepts to current public policy issues having to do with urban environmental and earth systems. Students not only learn economic concepts, but they will also learn how to explain them to decision-makers. The course will cover concepts and metrics from microeconomic theory, capital budgeting, game theory, information economics and risk management. The course will be tailored to the skill level of the students.

Course Overview

This is a semester-long course and it has three broad sections. The course begins by introducing the linkages between the environment and the economy. We discuss methods by which aggregate resource allocation decisions occur in capitalist economies. We also briefly review the policy and welfare implications of perfectly competitive markets that represent an idealized analytical benchmark. We then analyze markets where the benchmark assumptions do not hold. Specifically, we study how a laissez-faire approach leads to inefficient outcomes in the presence of "market failures" such as monopoly power, externalities, and public goods.

The second section discusses the appropriateness of various "command and control" as well as market-based public policy options (taxes, subsidies, tradable permits, regulations, public provision of goods and services) to correct these failures. We examine practical steps in the implementation of these tools by studying environmental valuation techniques and cost-benefit analysis. In the last section, we examine "government failure" to consider the limits of regulatory intervention arising from asymmetric information and the limitations of political economy. We then analyze more sophisticated public policy options that take into account information problems. We also study the possibilities for sustainability arising from corporate social responsibility initiatives. We then analyze the implications of risk management methods for resource allocation. We end the semester by examining current debates on a number of environmental policy problems.

Prerequisites

Students are expected to have had some exposure to economics. Students who have had an undergraduate course in intermediate microeconomics with calculus will be adequately prepared to excel in the course. Those who have not had such preparation will need to work harder to absorb the theoretical concepts along with the applications. However, it is not uncommon for students with little economics preparation to excel in this course. In the absence of any economics preparation, it is useful to have some mathematical fluency.

If you are concerned about your level of mathematics preparation, and did not attend the Math Camp provided before the start of the Fall semester, you are strongly encouraged to watch the lectures online. The lectures are available at:

http://www.youtube.com/view_play_list?p=DD613FD445373CB9

Method of Instruction

Pre-class reading, regular attendance at lectures, intelligent class participation and diligent efforts to do the problem sets are each necessary to master the course. The course will use some basic tools from calculus, econometrics, and linear algebra when convenient. However, the emphasis will be on building strong economic intuition and critical interpretation of economic research rather than technical research skills.

Textbook and Reading

The Kolstad textbook is required for the course. The course will also draw on the two recommended textbooks, as well as additional articles and readings listed on Canvas.

Required Textbook

Kolstad, Charles D. Environmental Economics. Second Edition. New York: Oxford University Press, 2010.

Recommended Textbooks

Keohane, Nathaniel, and Sheila Olmstead. Markets and the Environment. Washington: Island Press, 2007.

Pindyck, Robert, and Daniel Rubinfeld. Microeconomics. Eight Edition. New Jersey: Pearson Education.

Stavins, Robert N., ed. Economics of the Environment: Selected Readings, Sixth Edition. New York, New York: W. W. Norton & Company, 2012.

Course Outline

The following is a preliminary course outline. Certain section may be extended or speeded up depending on the progress of the class. Additional readings will be posted on Canvas before each lecture.

Date	Topic	Reading
Week 1 9/5/2017	Introduction to Environmental Economics	CDK(1,2)
Week 2 9/12/2017	Social Choice, Efficiency & Markets	CDK(3,4)
Week 3 9/19/2017	Cost-Benefit Analysis	CDK(6)
Week 4 9/26/2017	Market Failure	CDK(5)
Week 5 10/3/2017	Property Rights and Regulation	CDK(11,13: pp 262-272)
Week 6 10/10/2017	Taxes & Marketable Permits	CDK(12,13: pp 272-280)
Week 7 10/17/2017	Environmental Valuation	CDK(7,8,9,10)
Week 8 10/24/2017	Risk and Uncertainty	CDK(18)
Week 9 10/31/2017	<i>Midterm Exam</i>	
Week 10 11/7/2017	University Holiday	
Week 11 11/14/2017	Information Problems	CDK(14,15,16)
Week 12 11/21/2017	Voluntary Actions and Agreements	CDK(17)
Week 13 11/28/2017	Applying Economics in Practice for Environmental Policy Design	TBA
Week 14 12/5/2017	<i>Group Project Presentations</i>	TBA

Method of Evaluation

Regular attendance and active class participation are required. Students are expected to have done the readings for each lecture before class. As in management, teamwork is an essential element of success in the class. Grades for the course will be based on:

1. *Midterm Examination (35%)*

The examination will be given in class. Each student is required to take the examination and it will be a closed-book examination.

2. *Team Project (30%)*

There is a team presentation on the economics of a current environmental policy problem. The project includes a group presentation and a written report. Team composition for the presentation will be based on topic preferences and should be different from the problem set teams.

3. *Problem Sets (20%)*

There are 4 problem sets. You can work individually or form groups of up to 4 people to work on the problem sets. Each team member must sign on the front page that they contributed to the problem sets. Except under extenuating circumstances, students are expected to remain in the same problem set team for the entire semester. Problem sets are always due at the beginning of class and no late problem sets will be accepted.

Problem Set	Available on Canvas	Due Date
1	09/19/17	09/26/17
2	10/03/17	10/10/17
3	10/17/17	10/24/17
4	11/21/17	11/28/17

4. *Class Participation (15%)*

Students will be required to contribute to class discussions. Contributing to class discussions means enhancing the quality of the class experience for yourself and others. It involves making relevant and useful comments.

Re-Grading Policy

If you feel your solution has been overlooked or graded incorrectly, please hand in a written note explaining why the particular item should be regarded within two weeks after the problem set/exam was made available for pick-up. Once the two weeks have passed, you forfeit the right for a re-grade.

Academic Integrity and Professional Conduct

Columbia University expects that its students will act with honesty and propriety at all times and will respect the rights of others. It is fundamental University policy that academic dishonesty in any guise or personal conduct of any sort that disrupts the life of the University or denigrates or endangers members of the University community is unacceptable and will be dealt with severely.

Additional information on Academic Integrity and Professional Conduct can be viewed online:

<http://sps.columbia.edu/student-life-and-alumni-relations/academic-integrity-and-community-standards>

Academic dishonesty includes failure to properly cite ideas in your work that are not originally yours. Please familiarize yourself with the proper methods of citation and attribution. The University provides some useful resources online; we strongly encourage you to familiarize yourself with these various styles before conducting your research:

<http://library.columbia.edu/help/howto/endnote.html>