

# ECON 301: Environmental Economics and Policy

Professor Yating Chuang

Fall 2017

## 1 Administrative Details

Course schedule: T/R 3:05-4:30PM

Classroom: Fowler 202

Office: 206 Fowler Hall

Email: [ychuang@oxy.edu](mailto:ychuang@oxy.edu)

Office hours: T 9:30-11:00 and by Email appointment

Course website: <https://moodle.oxy.edu/course/view.php?id=23048>

## 2 Course Description

This course will introduce the causes of environmental problems and policy solutions to them through the lens of economics. The class is divided into two parts: theory and application. In the first part of the semester, we will use economic models to understand different market failures in the environmental contexts, conventional and market regulatory tools, the interaction between macroeconomy and the environment, and economists' view on environmental justice. In the second part of the semester, we will learn how to apply economic tools and theories to empirically analyze environmental policies, such as cap and trade, tax credits, performance standards, etc.

## 3 Learning Objectives

Upon completion of the course, students will be able to:

- Apply economic thinking in understanding the sources of environmental problems
- Apply economic tools to evaluate environmental policies based on economic efficiency, cost-effectiveness, and distributional impacts
- Learn to communicate clearly and collaborate productively

- Learn to critically read and review journal articles in environmental economics
- Heighten your attention to everyday decisions on the environment

## 4 Textbook

Keohane, Nathaniel and Sheila Olmstead. 2016. *Markets and the Environment*, Washington, DC: Island Press. (hereafter KO).

- Clear, concise and inexpensive.
- There is a free e-book in the Oxy library. <https://goo.gl/dFH2aL>

Kahn, Matthew. 2016. *Fundamentals of Environmental and Urban Economics*. (hereafter Kahn)

- A fun read e-book with modern examples. Very accessible text! Only \$1
- You can read from Kindle or any device. <https://goo.gl/gxbXw7>
- If you do not have a Kindle, you can convert this file to reading on your PC using this app. <https://goo.gl/7ssMuK>

## 5 Grading

- Exams (40%): Two closed-book, non-cumulative exams, and each counts for 20%. Exam 1 on **October 5**; exam 2 on **November 16**.
- Problem sets (20%): There will be 6 problem sets in total. I will automatically drop the one with the lowest score. Each counts for 4 %.
- Environmental Policy Workshop (30%): part 1: background and bibliography discussion counts for 5%, part 2: final group paper counts for 12%, policy workshop presentation counts for 5%, individual reflection paper counts for 8%
- Participation (10%)

Score	Grade
100-93%	A
90-92%	A-
87-89%	B+
83-86%	B
80-82%	B-
77-79%	C+
73-76%	C
70-72%	C-
67-69%	D+
60-66%	D
below 60	F

## 6 Course Requirements

### 6.1 Exam

There will be two close-book exams. The first exam is on **October 5**; the second exam is on **November 16**. On the exam date, you can use a calculator, but you cannot use any other digital device (laptop, iPad, cell phone, etc). There will be NO make-up exam, so please plan your schedule carefully. The only exception is for a sanctioned Oxy event (For example, travel to/from and participation in an intercollegiate or club sporting event). If this is the case, you have to notify me at least **1 week** before the exam, and obtain the proof from the related representative in charge.

If you are scared of numbers, I recommend reading a book called “A Mind for Numbers: How to Excel at Math and Science (Even If You Flunked Algebra).” Very useful!

### 6.2 Problem set

There will be **6** problem sets that may include problem-solving and diagram-drawing to better understand the basic concepts in environmental economics. There will also be short writing assignments. You should always start earlier to better organize your time.

All problem sets are due **at the beginning of the class** on the due date. **Late submission will be penalized by discounting 20% of your grade if you are late for 1 day**; 40% of your grade if you are late for 2 days; 60% of your grade if you are late for more than 3 days. Problem sets will not be accepted more than three days late. If you need to be absent on the due date, you should plan accordingly.

You are encouraged to work together on the problems, but you have to submit your own answers.

## 6.3 Environmental Policy Workshop

This assignment simulates environmental consultancy work in the real-world setting, designed in the way to help you learn to collaborate and communicate in a group environment.

In this exercise, you will work in a small interdisciplinary environmental consulting group of 3-4 people. You will get to choose your preference for topics during the semester. You will get a form to evaluate each other within the group and also outside of the group to prevent people from free-riding. You need to understand the strength and weakness of your team members and organize the team to make everyone better off.

Your task is to analyze an important environmental policy debate in California using economics tools/logic and evidence from the previous academic research. Those policies may not directly relate to what's in your mind when you come into the class, yet they all attract significant attention in policy debates.

Between October 24 and November 14, each group will present the background of their case and report on related literature and lead class discussion. Toward the end of the semester, we will spend 3 classes on “policy workshops”, in which each group will give a presentation on their analysis as if they are presenting to multiple stakeholders. Please consider creative ways to engage your colleagues in the class.

I have selected the following policy debate topics, and You will get more detailed explanation on each of them later in the semester.

Group 1 California cap and trade: should we include a social justice component?

Group 2 Paying for your plastic bag: bans or fees, or other

Group 3 Go green! Weatherization assistance for low-income households

Group 4 Knowing your bill: smart meter policy

Group 5 Labeling energy efficient products: the case of “Energy Star”

Group 6 Subsidizing green businesses: the case of Tesla

### 6.3.1 Group paper (G)

I will follow up with more detailed information when we assign the group.

- Part 1 (Due on **one of the assigned dates between 10/24 and 11/14**): Background + Annotated bibliography. You also need to present your background and

representative current literature from your annotated bibliography on the assigned dates. Each group has about 25 minutes.

- Part 2: Final group paper is due **on the presentation day**. Maximum length is 5,000 words, excluding bibliography.

### 6.3.2 Policy Workshop Presentation

Each group should prepare a **25-minute** presentation and **15-minute** question. You should think about ways to encourage discussion and facilitate class participation.

### 6.3.3 Individual reflection paper

Due on **12/10**. This should be a brief 2-page, single-spaced, research proposal (you cannot exceed the page limit. Font has to be at least 11 pt). The bibliography doesn't count into the page limit. Even though I suggest that you extend from your group project (because you have devoted more time!), this will be mainly your own research idea. The proposal should include the following pieces: the project objectives, specific research question, research methodology, data needed to answer this question, hypothesis you are testing, and anticipated findings. For research methodology, you only need to propose a method that is appropriate to answer your research question. Also, you don't need to choose your question based on data that already exists. You can write about what you would do if you had the ideal dataset.

## 6.4 Class Participation

The class discussion is very important for your learning. That is why I designed this class, especially in the second part of the semester, as a seminar. All participants are expected to contribute to group learning, not merely absorb materials passively. In particular, you are expected to convey your ideas clearly.

In order to participate, it is necessary that you attend class and arrive on time. You should read the materials before the class—I expect you come to class fully prepared. Your participation grade is judged by your attendance, willingness to participate (quantity), and quality of the participation. Using electronic devices without special permission will adversely affect your engagement grade.

## 7 Course Rules

- Academic Integrity: Cheating in any forms is not tolerable. If you have questions about it, you can simply talk to me. You are encouraged to discuss homework assignments

together, but do not simply copy from others. There are no collaborations during the exams.

- Plagiarism: Plagiarism occurs when such borrowing has not been acknowledged, and the College, therefore, wishes to ensure that everyone understands the correct procedures for acknowledging and identifying sources of borrowed material. The basic rule is this: If you include material drawn from any source beyond your own firsthand experience, and if this material is not common knowledge of the kind possessed by everyone working in the general area, you must give credit for that material in a reference that identifies the source by author, date, title and page.

Please see the student handbook website for concrete details:

<https://www.oxy.edu/student-handbook/academic-ethics/academic-ethics>

- Electronic Etiquette Policy: Cell phones (or any other iDigitals, or equivalence) should not be seen in the classroom (because they are designed to attract/distract you) and should be silenced or turned off during the class. If you have a reason to leave earlier and check your phone, you should notify me in advance. **No laptop** in the class. You need to participate and contribute in the class, instead of looking at your own computers. If you are interested in this policy, I recommend The New Yorkers article The Case for Banning Laptops in the Classroom (NPR reference here): <http://www.npr.org/templates/story/story.php?storyId=95256794>! (More comprehensive reasoning here): <http://www.newyorker.com/tech/elements/the-case-for-banning-laptops-in-the-classroom>
- Email: You are more than welcome to ask me questions via emails. However, you should always check the syllabus or Moodle website before asking any logistic questions. For more involved questions, I encourage you to come to my office hour to talk in person. I check emails regularly, but please leave 24 hours for me to get back to you. If you want to ask questions about the assignments, you should keep this in mind in order not to miss the deadlines.

Email Etiquette is important in your professional life. I recommend you to read the tips here written by Professor Chris Blattman at Columbia University:

<https://chrisblattman.com/2010/11/08/students-how-to-email-to-your-professor-employer-and-professional-peers/>

- Lateness and Absences: If you will be absent, late for, or leave early from the class, you should kindly notify me in advance. Please minimize your disruption when going in and out of the classroom during class time.

## 8 Accommodation

*Students With Disabilities:* If you have a documented disability (or think you may have a disability) and, as a result, need a reasonable accommodation to participate in this class, complete course requirements, or benefit from the College's programs or services, contact Disability Services Coordinator **as soon as possible**. To receive any academic accommodation, you must request an accommodation each semester. If you need accommodations for the exams, you must give me at least **one week notice** (the earlier the better), since the disability office requires time to find space and a proctor.

## 9 Course Schedule

Note: This is the tentative schedule. Based on students' interests and backgrounds, the pace of class varies. If there are changes to this schedule, I will guide you along the way.

Date	Content	Due
<i>Theory</i>		
8/29 (T)	Course introduction	
8/31 (R)	Review of Principle Economics	
9/5 (T)	Externalities	
9/7 (R)	Policy instrument: command and control	
9/12 (T)	Policy instrument: market-based tools	<b>HW 1 Due 9/12</b>
9/14 (R)	<b>Class cancelled</b>	
9/19 (T)	Public goods I	
9/21 (R)	Public goods II	<b>HW 2 Due 9/21</b>
9/26 (T)	Oxy sustainability initiatives	
9/28 (R)	Cost-benefit analysis	
10/3 (T)	Economic evaluation & review	<b>HW 3 Due 10/3</b>
10/5 (R)	<b>Midterm Exam</b>	
10/10 (T)	<b>Happy Fall Break</b>	
10/12 (R)	Economic growth & the environment	
10/17 (T)	Trade & the environment	
10/19 (R)	Environmental justice	
<i>Application</i>		
10/24 (T)	California cap-and-trade ( <b>Group 1</b> )	<b>HW 4 Due 10/24</b>
10/26 (R)	Green household behaviors: Part I ( <b>Group 2</b> )	
10/31 (T)	Energy efficiency ( <b>Group 3</b> )	
11/2 (R)	Oxy Solar Array Visit	
11/7 (T)	Green household behaviors: Part II ( <b>Group 4</b> )	
11/9 (R)	Behavioral economics and the environment	<b>HW 5 Due 11/9</b>
11/14 (T)	Green businesses ( <b>Group 6</b> )	<b>HW 6 Due 11/14</b>
11/16 (R)	<b>Exam 2</b>	
11/21 (T)	Movie	
11/23 (R)	<b>Happy Thanksgiving</b>	
11/28 (T)	Policy Workshop 1 (Group 1,2 presentation)	
11/30 (R)	Policy Workshop 2 (Group 3,4 presentation)	
12/5 (T)	Policy Workshop 2 (Group 6 presentation & conclusion)	
12/10 (S)		<b>Individual/Group paper Due</b>

## 10 Course Reading

I expect you to have done the reading before class on the bold date in brackets to the left of the reading. The reading list is tentative, subject to students' interests and backgrounds. Please follow my most current announcement in the class or email.

### Part I: Theories and Tools in Environmental Economics

Week 1: Introduction & Principle economics (8/29, 8/31)

- [8/31] KO Ch1, Ch2, Ch4

Week 2 & 3: Externalities & Policy Instruments (9/5, 9/7, 9/12)

- [9/5] KO Ch5 (only until public goods); Kahn Ch2
- [9/7][9/12] KO Ch8 Ch9, Kahn Ch3

Week 4: Public goods theory and practice (9/19, 9/21)

- [9/19] KO Ch5 (after public goods)
- [9/19] Bernstein, J.M. (2017), "Vickers Hot Springs." *Case Studies in the Environment*
- [9/21] Stavins Essay 30, The Problem of the Commons: Still unsettled after 100 years, Elinor Ostrom.

Week 5 & 6: Cost-benefit analysis & Evaluation (9/28, 10/3)

- [9/28] KO Ch3
- [9/28] Weitzman, M. (2007), "A review of the Stern Review on the economics of climate change." *Journal of Economic Literature*, 45(3), pp.703-724.
- [10/3] Stavins Essay 7, The Contingent Valuation Debate: Why Economists Should Care, Paul Portney.
- [10/3] Stavins Essay 9, Contingent Valuation: Is Some Number Better than No Number?, Peter A. Diamond and Jerry A. Hausman.

Midterm exam (10/5)

**Fall Break**

Week 7: The Macroeconomy & the environment (10/12, 10/17)

- [10/12] KO: Ch11; Kahn: Ch15 (Also read again about "green accounting")

- [10/12] Muller, N.Z., R. Mendelsohn, and W. Nordhaus (2011), “Environmental accounting for pollution in the United States economy.” *The American Economic Review*, 101(5), pp.1649-1675.
- [10/17] Levinson, A. (2010), “Offshoring pollution: is the US increasingly importing polluting goods?” *Review of Environmental Economics and Policy* 4, pp. 63-83.
- [10/17] Pasurka, C. (2008), “Perspectives on pollution abatement and competitiveness: theory, data, and analysis, *Review of Environmental Economics and Policy* 2: pp. 194-218.

Week 8: Environmental Justice (10/19)

- Fullerton, D. (2011), “Six distributional effects of environmental policy.” *Risk analysis*, 31(6), pp. 923-929.
- [10/19] Grainger, C. A. and C. D. Kolstad (2010), “Who pays a price on carbon?” *Environmental and Resource Economics*, 46(3), pp. 359-376

## Part II: Policy Application

For each topic, I assign 1-2 background paper review. I also assign an empirical paper as a case study, which may include technical modeling and econometrics. For the empirical paper, you do not need to figure out all the details, but you need to think about: 1) the objective of the research (including the research question, the type of policy being analyzed, and hypotheses they are testing; 2) the concept of the research method and the kind of data they use to answer the question; 3) conclusion and policy insights from the empirical evidence.

Week 9: California cap and trade (Group 1 discussion - California cap and trade)

- [10/24] You, C. (2017), Environmental Justice and Climate Policy: Is Californias Cap and Trade Failing Disadvantaged Communities, Unpublished working paper (Method: Difference in Difference)
- [10/24] KO Chapter 10: The U.S. Sulfur Dioxide Market

Week 9: Green household behaviors: Part I (Group 2 discussion - Plastic bag ban)

- [10/26] Rivers, N., S. Shenstone-Harris and N. Young (2017), “Using nudges to reduce waste? The case of Toronto’s plastic bag levy.” *Journal of Environmental Management*, 188, pp.153-162. (Method: Difference in Difference)
- [10/26] Kinnaman, T.C. and D. Fullerton(2000), The economics of residential solid waste management.(Focusing on background information and evidence of policy implication. Do not need to go into model details.)

Week 10: Energy efficiency (Group 3 discussion - Weatherization)

- [10/31] Chuang, Y. and M. Delmas (2017), Evaluating Large-Scale Residential Energy Efficiency Programs in Southern California, unpublished working paper (Method: Matching+Difference in difference)
- [10/31] Gillingham, K., D. Rapson, and G. Wagner (2016). “The rebound effect and energy efficiency policy.” *Review of Environmental Economics and Policy*, 10(1), pp. 68-88.

Week 10: Green household behaviors: Part II (Group 4 discussion - Smart meter)

- [11/7] Ito, K., 2014. Do consumers respond to marginal or average price? Evidence from nonlinear electricity pricing. *The American Economic Review*, 104(2), pp.537-563. (Method: Spatial discontinuity)
- [11/7] Pollitt, M.G. and I. Shaorshadze (2011), The role of behavioural economics in energy and climate policy, unpublished working paper

Week 11: Green businesses (Group 6 discussion - Tesla)

- [11/14] Calel, R. and A. Dechezlepretre (2016), “Environmental policy and directed technological change: evidence from the European carbon market.” *Review of Economics and Statistics*, 98(1), pp.173-191. (Method: Matching)
- [11/14] Kahn Chapter 10: The Economics of Green Business
- [11/14] Ambec, S., M. A. Cohen, S. Elgie and P. Lanoie (2013), “The Porter hypothesis at 20: can environmental regulation enhance innovation and competitiveness?” *Review of Environmental Economics and Policy*, 7(1), pp.2-22.