

Environmental Economics

Professor Yating Chuang

Spring 2021

1 Administrative Details

Course schedule : Thursday 13:10-16:00

Classroom : Social Science (SS)107

Office : SS 4F02

Email: yating@gm.ntpu.edu.tw

Course website : 數位學苑

2 Course Description

This course will introduce the causes of environmental problems and policy solutions 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 plastics bag bans, energy efficiency subsidies, subsidies for electric cars/motorcycles, and carbon tax/cap and trade policy.

3 Learning Objectives

1. Apply economic thinking in understanding the sources of environmental problems
2. Apply economic tools to evaluate environmental policies based on economic efficiency, cost-effectiveness, and distributional impacts
3. Learn to communicate clearly and collaborate effectively
4. Heighten your attention to everyday decisions on the environment
5. Develop a global mindset and improve language skills

4 Note on the language requirement

The instructional language of this course is English. That is, when in the “professional zone” (during class time and inside the classroom), I will commit myself to speak only English—treating the class professionally as if there are international students in the

class. Your formal presentation should be in English. Your comments and questions in the class should try to be in English as much as you can. Your emails should also try to be in English (not mandatory). However, during the free discussion time and outside the class/classroom, you can feel free to use other languages (i.e. Mandarin Chinese, Taiwanese, or other) if your colleague can fully understand you.

Benefit: 1) the best way to learn English; 2) experience a similar class taught in the U.S. without going abroad or spending extra (This is the same class I taught in the U.S. adapted with local context); 3) transition to attract foreign students in the future.

Cost: there may be efficiency loss since you are not native speaker. Please feedback constantly to make sure that you are still on track. Please discuss with me from time to time. I am here to help you.

5 Textbook

To save you money, the textbook is not mandatory. I will upload the articles on 數位學苑。

Textbook for your reference :

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

- Clear, concise and inexpensive.

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 _le to reading on your PC using this app. <https://goo.gl/7ssMuK>

6 Grading

- Exam (40%)
- Homework (0%) : There will be two problem sets for your own practice
- Environmental Policy Workshop (40%) :
 - *Part I*: Group presentation for the assigned reading 10%
 - *Part II*: Group PowerPoint slides 10%, Policy workshop presentation 20%
- Participation (20%)

7 Course Requirements

6.1 Exam

There will be only one exam on **4/22**. 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.

6.2 Homework

There are two problem sets. To reduce your burden, those problem sets are for your own practice. They are very useful for your understanding of the class materials and for your exams. Please PRACTICE (instead of only looking at the solutions) and feel free to discuss with me and your classmates.

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 and teammates 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 policy debate in Taiwan using economic tools/logic and evidence from the previous academic research. All the selected policies attract significant attention in policy debates.

Between April 29 to May 27, each group will present an article broadly related to their topic in their assigned week. At the end of the semester, we will host a “policy workshop,” 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 colleague in the class.

I have selected the following topics. You will receive more detailed explanation and guided exercise on each of them later in the semester :

- Group 1 Paying for your plastics: is it effective?
- Group 2 Taiwan’s energy policy 2.0: should the government subsidize energy conservation/energy efficiency?
- Group 3 Should the government subsidize green businesses? Case of electric motorcycle in Taiwan.
- Group 4 Should Taiwanese government implement the cap and trade system (or an alternative carbon tax scheme)?

6.3.1 *Part I* Group Presentation

Each group has **15-20 minutes** to summarize the assigned reading (Only oral presentation)

6.3.2 *Part II* Policy Workshop

Oral Presentation: Each group has **30 minutes** to present their analysis and **10 minutes** for Q&A (**6/17**). You should present it **creatively** to help everyone better

understand the topic and facilitate the discussion.

Group (PowerPoint or other) slides submission: Your slides will be the final deliverables. You do not need to submit any other written document. So please be attentive to questions and comments on the presentation day and revise slides accordingly before the submission deadline. The deadline is **6/27** (Sun) 11:59pm. Please Email me directly.

6.4 Participation

In-class participation is critical to your learning. Participation includes 1) coming to the class on time, 2) participate in the activities/games, and 3) contribution to the discussion. It may be challenging for you in the beginning. Trust me! You can do it and you do it well when you do it more. Using electronic devices without special permission will adversely affect your engagement grade.

10-min clip: I will show a 5-10 mins Youtube clip in every beginning of the class as our routine. You will get extra rewards (and of course learning fun facts) if you are always on-time. I will update the link in this [google doc](#).

8 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 to improve your learning. 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.

You should

- 1) **Quote directly from a source:** you must use quotation marks if the sentence is directly coming from the source.
- 2) **Paraphrase:** paraphrasing the sentences means changing substantial amount of structure and wording from the original. You also need to provide the reference. If you are not sure if it is an appropriate paraphrasing, you can always check with me.

(reference from [Oxy Academic Ethics website](#).)

- **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 數位學苑 website before asking any logistic questions. For more involved questions, I encourage you to come to my office hours to talk in person. I check emails regularly, but please leave 24 hours for me to get back to you.

Email Etiquette is important in your professional life. For example, you should always have a proper title, you should address me properly, sign your name, and be concise.

Example email like this:

Title: Midterm Exam

Dear Professor Chuang,

I am [Your name] in your Environmental Economics class. I have some questions about the midterm exam.

- xxxxxxxxxx
- xxxxxx

Thank you.

Best,

[Name]

More tips here written by Professor Chris Blattman at Columbia University.

(Even more important if you write to professors you do not know) :

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

Another tip from a consultant for academic authors

[How to email your professor \(without being annoying\)](#)

- 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.

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>First Half: Theory</i>		
2/25	Course introduction + Coffee break	
3/4	Externalities + Policy instrument: command and control	
3/11	Policy instrument: market-based tools + Cap and trade game	
3/18	Public goods	HW1/Assign groups
3/25	Cost-benefit analysis + Economic evaluation	
4/1	Flexible catch-up (before spring break)	
4/8	Economic growth & the environment	
4/15	Trade & the environment + Environmental Justice	HW2
4/22	Midterm Exam	
<i>Second Half: Application</i>		
4/29	Movie + Basic applied statistics explanation	
5/6	Green household behaviors + Group1 Part I Present	
5/13	Energy Efficiency + Group2 Part I Present	
5/20	Green Business + Group3 Part I Present	
5/27	Cap and Trade/Carbon Tax + Group4 Part I Present	
6/3	Invited talk + Hiking	
6/10	(Preparation for the workshop/QA Office Hour)	
6/17	<i>Part II</i> Policy Workshop (Group 1-4) & Conclusion	
6/24		Group Slides Revise and Submit on 6/27 (Sun)

10 Reading Reference

For the second half of the semester, I will give you two reading reference for each topic—a background reading and an empirical article. The one with a star (*) is the assigned reading for the *part I* group presentation.

Week 5/6: Green household behaviors: Part I (Group 1 presentation)

- Pollitt, M.G. and I. Shaorshadze (2011), The role of behavioural economics in energy and climate policy, unpublished working paper *
- 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)

Week 5/13: Green household behaviors: Part II (Group 2 presentation)

- Gillingham, K., Rapson, D., & Wagner, G. (2016). The rebound effect and energy efficiency policy. *Review of Environmental Economics and Policy*, 10(1), 68-88. *
- Chuang, Y., M. Delmas, and S. Pincetl. (2020). Are Residential Energy Efficiency Programs Effective? An Empirical Analysis in Southern California, unpublished manuscript. (Method: Difference in difference + matching + fixed effects)

Week 5/20: Green businesses (Group 3 discussion – Electric car/motorcycle)

- 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. *
- 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)
- Kahn Chapter 10: The Economics of Green Business

Week 5/27: Cap and trade or tax

- Keohane, N. O. (2009). Cap and trade, rehabilitated: Using tradable permits to control US greenhouse gases. *Review of Environmental Economics and Policy*, 3(1), 42-62. *
- You, C. (2017), Environmental Justice and Climate Policy: Is Californias Cap and Trade Failing Disadvantaged Communities, Unpublished working paper (Method: Difference in Difference)