

Syllabus for PPHA 36930: Environmental Economics. Winter 2026.

Instructor: Shaoda Wang
Tuesday/Thursday: 2.00-3.20pm.

Course Description: This course presents a broad-based treatment of the theory and application of environmental economics. Topics are introduced in the context of real-world environmental policy questions (with special emphasis on energy policy), then translated into microeconomic theory to highlight the salient constraints and fundamental trade-offs faced by policymakers. Topics include property rights, externalities, Pigouvian taxes, command-and-control regulation, cap-and-trade, valuation of environmental quality, cost-benefit analysis, policymaking under uncertainty, and inter-regional competition. Prerequisites: Intermediate microeconomics.

Textbook (not required): Kolstad, Charles D., Environmental Economics, 2nd Edition: March 31, 2010. ISBN-10: 0199732647

Grading: 10% class participation; 40% problem sets; 50% final exam. There will be four problem sets, you can work in groups, but each student must submit their own answers electronically on Canvas. Typed answers are preferred. Late assignments will not receive any credit. The final (closed-book) exam will be based on the lecture materials and problem sets.

TA: Kongdi Zheng (kongdi@uchicago.edu)

TA Session: Friday 10:30-11:50 AM (K0010)

Emails: You can reach me at shaoda@uchicago.edu, and Kongdi at kongdi@uchicago.edu. Please write the email with a subject in the format of “[PPHA 36930] X” (substituting “X” with a brief title of your questions or issues). In the email your full name should be included. Please feel free to write me on administrative issues that are not covered in the syllabus, or about your concerns related to the course. Specific questions on the course material are supposed to be answered during the instructor’s or the TA’s office hours.

Instructor Office Hour: Friday 3-4pm (Keller 2055); signup here: <https://calendar.app.google/YsrFSrL1qTGxrWEW9>

TA Office Hour: Wednesday 01:30-02:30 PM (K2050)

Course Topics (On average, we will cover 2 topics per lecture. Each topic will have a separate set of slides.):

I. The Role of Markets

1. What is the point of this course?

- Read Kolstad Ch. 1, 2 as background to prepare for course

2. Market (in)efficiency: when and why do economists like markets?

- Kolstad Ch. 4, especially 4.I and 4.II (primary)
- Kolstad Ch. 5., especially 5.II (primary)
- Kolstad Ch. 3 provides a useful background on social choice

II. Externalities

3. The Pigouvian prescription: how do we fix externalities?

- Kolstad Ch. 12.I, 12.II, 12.III
- Kolstad Ch. 11 is useful background, will be primary reading below

4. The Diamond model: when must we amend the Pigouvian prescription?

5. Buchanan's critique: how does imperfect competition affect the design of externality-correcting policies?

- Kolstad Ch. 12.IV (primary)

6. Why are Pigouvian taxes more cost effective than regulation?

- Kolstad Ch. 11 (repeat from above), with 11.III (primary)

7. Cap-and-trade is (sometimes) equivalent to a Pigouvian tax

- Kolstad Ch. 13.II (primary)

8. Policy discussion: lessons from market-based environmental policies

9. The Weitzman model: should we regulate prices or quantities?

- Kolstad Ch. 15 (primary)

10. The Coase Theorem: do we really need the government to fix an externality?

- Kolstad Ch. 13.I (primary)
- Coase, Ronald. "The Problem of Social Cost" Journal of Law and Economics Vol. 3 (1980). Read pp. 1-8, which will give you the basic idea.

III. Public Goods

11. The Samuelson Condition: how much do we want of a public good?

- Kolstad Ch. 5.III, 5.IV (primary)

12. Do all mechanisms provide too little of public goods?

- Kolstad Ch. 5.V (primary)

13. Classroom activity: Testing the Tiebout hypothesis: does voting with your feet lead to efficiency?

14. What are congestible public goods?

- Kolstad Ch. 5.III, 5.IV (primary)

15. Policy discussion: international climate negotiations

- Stavins, Robert. "Paris Agreement: A Good Foundation for Meaningful Progress" Resources for the Future Blog Post. December 14, 2015
- Aldy, Joseph and William Pizer. "The Road to Paris and Beyond: Comparing Emissions Mitigation Efforts" Resources for the Future. May 13, 2015.

16. Equity and efficiency: who should abate carbon emissions?

IV. Valuation and cost-benefit analysis for environmental economics

17. Hedonics I: how can we use prices to value amenities?

- Kolstad Ch. 7 provides a nice background on valuation concepts
- Kolstad Ch. 8.I, 8.II (primary)
- Davis, Lucas. "The Effect of Health Risk on Housing Values: Evidence from a Cancer Cluster" American Economic Review 2004. This is an academic article. Skim it to get the basic idea.

18. Hedonics II: how does sorting effect amenity valuation?

- Kolstad Ch. 8.III, 8.IV through subsection E (primary)

19. Classroom activity: hedonic price equilibria

20. The VSL: how do economists value human life?

- Kolstad Ch. 8.IV.F (primary)

21. How can defensive expenditures reveal amenity valuation?

- Kolstad Ch. 9 (primary)

22. What is option value?

23. Are stated preferences reliable measures?

- Kolstad Ch. 10.I (primary)

24. Contingent valuation: can we use stated preferences to value nonmarket goods?

- Kolstad Ch. 10.I (primary, same as prior lecture)

V. Incidence

25. Who bears the burden of a policy?

- Kolstad Ch. 6.II (primary)

26. How does general equilibrium complicated incidence?

27. Who is harmed by pollution? Who is harmed by policy?

- Cicala, Steve. "Who's Waging the War on Coal? Not the US Government" Forbes October 27, 2016.

28. Environmental justice: Does the environment discriminate?

- Depro, Brooks, Christopher Timmins and Maggie O'Neil. "White Flight and Coming to the Nuisance: Can Residential Mobility Explain Environmental Justice?" Journal of the Association of Environmental and Resource Economists 2015. This is an academic article. Read the abstract and introduction carefully. Skim the rest of the article to get the idea of the analysis.

29. Goodhart's Law: who benefits when firms game environmental regulations?

30. Policy discussion: who benefits from green subsidies?

- Davis, Lucas. "Are Clean Energy Tax Credits Equitable?" Energy Institute at Haas Blog, July 20, 2015.

VI. Problems with real-world policies

31. What is leakage?

- Kolstad Ch. 19, especially 19.I and 19.III (primary)

32. Policy discussion: what are examples of incomplete regulation?

33. Why are deposit-refund systems useful?

- Kolstad Ch. 16.II (primary)
- The rest of Kolstad Ch. 16 is full of useful material, so read that as well for background.

34. What is the rebound effect?

35. Policy discussion: does energy efficiency deliver?

- Fowlie, Meredith. "Are the Benefits to the Weatherization Assistance Program's Energy Efficiency Investments Four Times the Costs?" Energy Institute at Haas Blog, October 6, 2015.

36. Do people understand their energy choices?

- Allcott, Hunt and Michael Greenstone. "Is There an Energy Efficiency Gap?" *Journal of Economic Perspectives*, 2012. This is a survey article that reviews the academic literature. Read all of it.

37. Final review of course