Department of Resource Economics
University of Massachusetts-Amherst

RES EC 721: Advanced Topics in Environmental and Resource Economics
Fall 2022

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Objectives and Requirements

Res Ec 721 is a graduate course in environmental economics. The course is focused largely, but not exclusively on environmental economics and policy. Our objective is to examine some of the advanced topics in the field. All students are expected to have taken graduate courses in microeconomic theory and econometrics. It is also desirable to have taken the first course in our graduate environmental and natural resource economics sequence, Res Ec 720.

This course is team-taught. Professor John Stranlund will focus on some advanced topics in the theory of environmental regulation in the first half of the course. Evaluations in this part will be based on class participation, a midterm exam, and perhaps a few homework assignments. In the second half of the course, Professor Jamie Mullins will focus on the so-called "Third Wave of Environmental Management," which encompasses voluntary and information-based approaches to environmental challenges. Evaluations will be based on written responses to articles, active engagement at all class meetings, and a discussion leadership assignment.

Throughout the course we expect each of you to attend *every* class prepared for that day's assignment.

Office hours

While we will not have regularly scheduled office hours, we are happy to meet with you outside of class time by appointment.

Academic Honesty

If we find that you have cheated on a writing assignment or an exam, we will pursue the matter to the fullest extent possible.

Texts

There are no required texts for this course, but you may wish to purchase the most recent graduate text in this field as well as a short book on empirical economics and causal inference.

Daniel J. Phaneuf and Till Requate. 2017. *A Course in Environmental Economics: Theory, Policy, and Practice.* Cambridge University Press.

Joshua Angrist and Jorn-Steffen Pischke. 2014. *Mastering 'Metrics: The Path from Cause to Effect*. Princeton University Press.

In addition, we recommend that you familiarize yourselves with the top journals in our field, especially the *Journal of Environmental Economics and Management* (JEEM) and the *Journal of the Association of Environmental and Resource Economists* (JAERE). You should also familiarize yourself with the *Review of Environmental Economics and Policy.* This journal publishes accessible reviews of various topics in environmental economics, so it is a good source for gaining a broad understanding of research in this field.

Course Outline and Reading List (Subject to Change)
Readings marked with a (*) in the list below will be stressed and should be read prior to class. The reading list is also meant to serve as a partial bibliography should you wish to delve deeper into a particular topic. If you wish to go even further, please feel free to ask us about additional readings.

First Module: Professor Stranlund
(Through Monday, Oct. 24, 13 class periods)

1. Review

John Stranlund. 2018. Fundamentals of Environmental Regulation. (With introduction to pricing co-pollutants in section 6).

John Stranlund. 2018. An Introduction to Optimal Control with Natural Resource Applications

2. Dynamic Environmental Regulation

*Kling, Catherine and Jonathan Rubin (1997). "Bankable permits for the control of environmental pollution." *Journal of Public Economics* 64: 101-115.

*Schennach, Susanne (2000). "The economics of pollution permit banking in the context of Title IV of the 1990 Clean Air Act Amendments." *Journal of Environmental Economics and Management* 40(3), 189-210.

*****John Stranlund. 2018. Dynamic environmental regulation.

3. Asymmetric Information

3.1 Hidden Abatement Costs

3.1.1 Taxes vs. emissions markets vs. markets with price controls (review)

M.J. Roberts and M. Spence. 1976. Effluent charges and licenses under uncertainty, *Journal of Public Economics* 5, 193-208.

*****Fell, Harrison, Erica Moore and Richard Morgenstern. 2011. Cost containment under cap and trade: a review of the literature. *International Review of Environmental and Resource Economics* 5, 285-307.

*****Phaneuf and Requate. 2017. Chapter 4: Imperfect information. Especially sections 4.1 and 4.2.

*****John K. Stranlund. 2012. "Taxes vs. tradable permits vs. hybrid policies." Lecture notes.

3.1.2 Uncovering private information—mechanism design

*Dasgupta, P., Hammond, P. and Maskin, E., 1980. On imperfect information and optimal pollution control. *The Review of Economic Studies*, *47*(5), pp.857-860.

*Montero, Juan Pablo. 2008. A simple auction mechanism for the optimal allocation of the commons. *American Economic Review* 98(1), 496-518.

*****John K. Stranlund. 2019. Uncovering private cost information: mechanism design

3.2. Hidden Abatement

2.2.1 Enforcing environmental policies

* Gray, W.B. and Shimshack, J.P., 2011. The effectiveness of environmental monitoring and enforcement: A review of the empirical evidence. *Review of Environmental Economics and Policy*, *5*(1), pp.3-24.

*Stranlund, John K. 2017. "The economics of enforcing emissions markets. *Review of Environmental Economics and Policy* 11(2), 227-246.

*****John Stranlund. 2018. Enforcing environmental policies.

3.2.2 Regulating non-point source pollution

*****Shortle, James and Richard Horan. 2001. The economics of nonpoint pollution control, *Journal of Economic Surveys* 15(3): 255-289.

*****John Stranlund. 2013. Regulating nonpoint source pollution.

4. Revenue recycling and the double dividend hypothesis

*****Goulder, Lawrence H., 2013. Climate change policy's interactions with the tax system. *Energy Economics* 40, pp. S3-S11.

Ian W. H. Parry. 1995. Pollution taxes and revenue recycling. *Journal of Environmental Economics and Management* 29(3), pp. S64-S77.

*****Phaneuf and Requate. 2017. Chapter 7: Environmental policy with pre-existing distortions.

*****John Stranlund. 2020. Revenue recycling and the double dividend hypothesis.

Second Module: Professor Mullins
(Wed., Oct. 26 through Mon., Dec. 12)

The dates below specify when we will discuss these papers; please read the papers in advance of the specified date (and bring a copy to class!).

I have marked "methods papers" with an asterisk (*). These papers offer useful examples of commonly used techniques in causal inference. As you read these papers, pay special attention to how they embody those methods.

Class 1
Course Overview: Causal Inference, Research Design, and Data Sources
Research Workshop

Class 2
Field Experiments
Allcott, H. (2011) "Social norms and energy conservation." Journal of Public Economics 95(9): 1082-1095.
Delmas, M., and N. Lessem (2014) "Saving power to conserve your reputation? The effectiveness of private versus public information." Journal of Environmental Economics and Management 67(3): 353-370.

Class 3
Difference-in-Difference
*Jacobsen, G. (2011) "The Al Gore Effect: An Inconvenient Truth and Voluntary Carbon Offsets," Journal of Environmental Economics and Management, 61(1): 67-78.
*Kotchen, M.J. and L. Grant (2011) "Does Daylight Saving Time Save Energy?" Review of Economics and Statistics 93(4):1172-1185.

Class 4
Instrumental Variables
Mastering Metrics IV Chapter
*****Moretti, E. and M. Neidell (2009), "Pollution, health, and avoidance behavior: evidence from the ports of Los Angeles," Journal of Human Resources, 46(1):154-175.

Class 5
Regression Discontinuity
Mastering Metrics RD Chapter
*Cutter, B. and M. Neidell (2009) "Voluntary information programs and environmental regulation: evidence from 'Spare the Air,'" Journal of Environmental Economics and Management, 58(3):253-265.

Class 6
Matching
*Walls, M., T. Gerarden, K. Palmer, and F. Xian (2017) "Is energy efficiency capitalized into home prices? Evidence from three U.S. cities," Journal of Environmental Economics and Management, 82:104-124.
Research Workshop

Class 7
Referenda
Burkhardt, J. and Chan, N.W. (2017) "The Dollars and Sense of Ballot Propositions: Estimating Willingness to Pay for Public Goods Using Aggregate Voting Data," Journal of the Association of Environmental and Resource Economists 4(2):479-503.
Research Workshop

Class 8
Climate and Individual Behavior
Graff Zivin, J. and M Neidell (2014) "Temperature and the Allocation of Time: Implications for Climate Change." Journal of Labor Economics, 32(1):1-26.
Chan, N.W. and C. Wichman (2018) "The Effects of Climate on Leisure Demand: Evidence from North America." Working Paper, October 2018.

Class 9
Peers and Social Behavior
Bollinger, B. and K. Gillingham (2012) "Peer effects in the diffusion of solar photovoltaic panels," Marketing Science, 31(6):900-912.
Kahn, M. (2007) "Do Greens Drive Hummers or Hybrids? Environmental Ideology as a Determinant of Consumer Choice," Journal of Environmental Economics and Management, 54:129-45.

Class 10
TBD

Class 11
TBD

Class 12
TBD

Class 13
Research Proposal Presentations
Next Steps

Accommodation Statement
The University of Massachusetts Amherst is committed to providing an equal educational opportunity for all students. If you have a documented physical, psychological, or learning disability on file with Disability Services (DS), you may be eligible for reasonable academic accommodations to help you succeed in this course. If you have a documented disability that requires an accommodation, please notify me within the first two weeks of the semester so that we may make appropriate arrangements.

Academic Honesty Statement
Since the integrity of the academic enterprise of any institution of higher education requires honesty in scholarship and research, academic honesty is required of all students at the University of Massachusetts Amherst. Academic dishonesty is prohibited in all programs of the University. Academic dishonesty includes but is not limited to: cheating, fabrication, plagiarism, and facilitating dishonesty. Appropriate sanctions may be imposed on any student who has committed an act of academic dishonesty. Instructors should take reasonable steps to address academic misconduct. Any person who has reason to believe that a student has committed academic dishonesty should bring such information to the attention of the appropriate course instructor as soon as possible. Instances of academic dishonesty not related to a specific course should be brought to the attention of the appropriate department Head or Chair. Since students are expected to be familiar with this policy and the commonly accepted standards of academic integrity, ignorance of such standards is not normally sufficient evidence of lack of intent (http://www.umass.edu/dean_students/codeofconduct/acadhonesty/).