

ECON 573 Graduate Environmental Economics

Term 2, 2020

This version: December 3, 2019

- Mon/Wed 2:00pm-3:30pm, Buchanan B218
- Instructor: Patrick Baylis
 - Iona 113
 - Office hours: www.patrickbaylis.com/office-hours
 - patrick.baylis@ubc.ca

1 Course details

Description: This is a graduate-level course in environmental economics designed to help students understand how to analyze and conduct empirical research. The first part of the course will focus on conceptual treatments of externalities, public goods, and pollution regulation. The second part will cover standard applied econometric approaches in the field, and the third part will return to selected topics in the field along with content designed to assist students with their own empirical research project. Every class will include a student presentation section in which a pre-assigned student will critically analyze and present an empirical paper in the field. The course is suitable for both M.A. and Ph.D. students.

Student learning outcomes:

This course has two broad goals: to introduce students to the theory and practice of modern environmental economics and to assist students in developing, presenting, and analyzing empirical research projects. More specifically, I will measure our success in the course by the extent to which you are able to do the following by the end of the courses:

1. Describe the core theoretical contributions to environmental economics. Demonstrate the ability to solve theory-based problems and proofs and to develop variations on existing models.
2. Understand, analyze, and apply the empirical research designs used by empirical economics working in environmental economics. Be able to articulate the identification assumptions required by different kinds of research designs and analyze the plausibility of those assumptions in existing research.
3. Replicate the main tables and figures of existing research papers using statistical software.
4. Discuss and present to an audience papers in the field of environmental economics. Articulate the central contributions of papers and distill the lessons of previous research as well possible areas for advancement or improvement.
5. Develop a detailed research proposal for an empirical research project to answer a question in the field.

Related courses: Related courses offered by the School of Economics include Economics 370 (Cost Benefit Analysis), 374 (Land Economics), 471 (Non-renewable Resources) and 472 (Renewable Resources).

Prerequisites: ECON500 (Microeconomics), ECON502 (Macroeconomics), ECON526 (Mathematics for Economics), and ECON527 (Econometric Methods of Economic Research).

Additionally, students need to have some experience using statistical software (R or Stata are best, although Python and Matlab are also acceptable) to conduct the replication exercise assignments. Unfortunately, time constraints mean that neither the course nor office hours can cover data skills, although I am happy to provide external resources for learning either R or Stata.

Learning activities: Students will learn the course material by completing the assigned readings, attending lecture, and completing the assessments.

Course materials: Reading assignments will be posted on Canvas. There is no textbook, but students may find the following texts useful for background:

- Daniel J Phaneuf and Till Requate. 2016. *A Course in Environmental Economics: Theory, Policy, and Practice*. Cambridge University Press: PhD-level textbook in environmental economics. I will draw on it for the early part of the course, but you don't need to buy it.
- Charles Kolstad. 2011. *Intermediate Environmental Economics*. Oxford University Press: Advanced undergraduate textbook, useful for students unfamiliar with the field.
- Joshua D Angrist and Jörn-Steffen Pischke. 2008. *Mostly Harmless Econometrics: An Empiricist's Companion*. Princeton University Press: Concise introduction to modern empirical econometric approaches. More detail on many of the techniques we discuss in the second part of the course.

Assessments: Your grade will be determined with the following assessments:

- Participation (15%)
 - Attendance and in-class participation (10%)
 - Discussion paper presentation (10%)
- Written assignments (25%)
 - Problem set (5%)
 - Replication exercises ($2 \times 5\%$)
 - Referee report (5%)
- Research proposal (60%)
 - Proposed research questions (5%)
 - Data and empirical strategy (5%)
 - Presentation of research proposal (10%)
 - Peer research proposal feedback (5%)
 - Final paper (35%)

Your final grade will be reported as a percentage per UBC Policy¹.

Missed assignments: Assignments must be turned in electronically via Canvas by the due date and time. Every day an assignment is late will reduce the grade percentage by 20 points.

Academic concessions: If you require an in-term concession (to turn in an assignment late or because you cannot attend a midterm, for example), you must contact Arts Advising as soon as you are aware of the need (i.e., before the work is missed except in extraordinary circumstances). Please review their website for concession criteria as well as the process to follow. Students in other Faculties should contact their Faculty advising office for direction. If you are granted a concession for a given assessments, I will reassign its weight to other assessments of the same type.

UBC-wide policy statement: UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious and cultural observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available here.

Accommodations: I am happy to make necessary accommodations for students who require it. Please contact Access and Diversity to obtain an Academic Accommodation Letter and provide it to me within the first two weeks of the term. See UBC Policy 73² for more details.

Academic integrity: I expect all students to exhibit academic integrity in accordance with UBC Policy³.

¹<http://www.calendar.ubc.ca/Vancouver/index.cfm?tree=3,42,96,0>

²<http://www.universitycounsel.ubc.ca/files/2010/08/policy73.pdf>.

³<http://www.calendar.ubc.ca/Vancouver/index.cfm?tree=3,286,0,0>.

2 Course schedule

This course is divided into three units. Below a rough schedule is given, but a detailed schedule, including required readings, will be maintained on Canvas. Lectures are topically organized but may be spread over multiple class periods as necessary.

Unit 1: Foundational tools

1. Introductory lecture
2. Environmental economics and the theory of externalities
3. Environmental problems and policy issues
4. Introduction to the theory of environmental policy
5. Public goods
6. Liability, compliance, and enforcement
7. Consumer choice
8. Environmental valuation

Unit 2: Empirical tools

1. Introduction to empirical approaches in environmental economics
2. Causal inference, counterfactuals, and the “gold standard” of randomized experiments
3. Difference-in-differences estimators
4. Fixed effects estimators
5. Instrumental variables estimators
6. Regression discontinuity estimators
7. Presenting and writing empirical projects

Unit 3: Topics in environmental economics

1. Health and the environment
2. Climate change economics
3. Trade and the environment
4. The economics of electricity
5. Envirodevonomics

3 Acknowledgements, errata, and copyright

This course was designed with inspiration from courses taught by Meredith Fowlie (UC-Berkeley), Brian Copeland (UBC), James Sallee (UC-Berkeley), and Wolfram Schlenker (Columbia). Any errors are my sole responsibility, and I will be grateful to students who report them. I am the copyright owner for course material unless otherwise specified.

References

- Angrist, Joshua D, and Jörn-Steffen Pischke. 2008. *Mostly Harmless Econometrics: An Empiricist’s Companion*. Princeton University Press.
- Kolstad, Charles. 2011. *Intermediate Environmental Economics*. Oxford University Press.
- Phaneuf, Daniel J, and Till Requate. 2016. *A Course in Environmental Economics: Theory, Policy, and Practice*. Cambridge University Press.